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## I.—*A Sketch of the History of the Ramoossies residing in the Sattarah Territory and in the Poona and Ahmednuggur districts—By Captain Alexander Mackintosh of the 27th Regt. M. N. I. Commanding Ahmednuggur Local Corps.*

### CHAPTER VI.

**Their marriage ceremonies and remarks relative to them.—The first steps taken.—The Ramoossy nuptial ceremonies scarcely differ from that of the Shoodur.—The ceremonies of the Mangnie, Koonkoo, and Sukkur Poorah explained.—The Astrologer consulted respecting a fortunate day to celebrate the ceremony.—The besmearing the parties with Hullud.—The Joombra.—Erect a temporary shed or Mandwah.—Worship the household gods.—The Mandwah consecrated by placing the Dewuk in it.—The Gondull.—Preparations in the bride's house.—The bridegroom proceeds to the village in which the bride resides.—They move in procession —The Bhutt who performs the marriage ceremony enters the Mandwah.—The whole of the proceedings connected with the ceremony explained.—Proceedings at the Jannoosswarah.—Perquisites of the Ballottahdars, &c.—Presents made to the parents of the bride and bridegroom.—The bride accompanies the bridegroom to the house of his parents.—The Wurat procession with torches.—The expenses attending the marriage ceremony. —That of the Mhotur or Paatt explained.**

The first step taken by a parent, is to ascertain where he can procure among the people of his own tribe, (but of a different family stock,) a suitable match for his child, when it has attained the age of three, four, five, or six years. In general, the father, an old female relative, or some other member of the family, is employed to make the necessary enquiries on this point.

It frequently happens among the higher castes, that it is the father of the girl who sets these inquiries on foot in the first instance; but among the lower orders, it is more commonly the father of the boy that does so. The following, is the mode of proceeding among

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the Ramoossies, which differs scarcely in any respect from that followed by the members of the Shoodur, or fourth great division of Hindoos.

When it has been agreed on between the parents of two children, to unite them in marriage, the father of the boy goes to the house of the father of the girl, and he presents his intended daughter-in-law, with five pieces of the kernel of a cocoanut, and puts the Koonkoo* on her forehead, and then returns to his home. This proceeding is termed the "Mangnaie," "the Koonkoo," that is, "the asking."

About four months afterwards, or any time within the year, the sukkur poorah or betrothment takes place; the boy's father having provided himself with a few jewels, a choulie, a sary, a phurky, some koonkoo, some cocoanut, about a pound of sugar-candy, and a rupee to place on the girl's forehead, and accompanied by five or six friends, proceeds to the house of the girl's father. Having administered some refreshment to them, the girl's father invites the relations of the family men and women, and a portion of the inhabitants of the village. When they have assembled, the boy's father takes the girl and places her on his knee, he puts a bit of the sugar into her mouth, and then places the clothes he brought with him into her hands, upon which she retires into the interior of the house with her female relatives. Having adorned herself in her new dress, and put on the koonkoo, she returns and places herself near her intended father-in-law who puts the sugar and five pieces of cocoanut into her lap, which she ties in the end of her sary. The father-in-law now places the rupee† on her forehead, which her father takes. The boy's father then presents the Patell and the rest of the people who have witnessed the ceremony with paun soopary (beetlenut) and should the parties be in good circumstances, music is used in celebrating this ceremony which is termed the "shukar poorah," or the betrothment. The same day or the following, the father of the boy and those who accompanied him return to their own homes.

The father of the boy is henceforth obliged to provide the girl

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* Koonkoo, this is a rich reddish coloured powder prepared, by steeping the roots of the Turmeric, for three days in plain water, and for three days in lime juice: it is then cut up into small pieces, and kept one day in a solution of sal ammoniac, alum, and lime juice, and when dried it is ground in the hand mill. This married women rub on their foreheads or make a round mark with it, which they always replace after bathing. Widows are obliged to discontinue using the koonkoo.

† This *seals* the contract.

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with what clothes she may require, which is done once in the year. At the expiration of one, two, or four years, when he has accumulated sufficient funds to defray the expense of the marriage, he will go to the girl's father, and tell him, that they must now marry their children. Should her father state, that he has not the means of doing so this year owing to his poverty, the boy's father then offers to lend him such a sum for the occasion as he may require, settling in the presence of two or three of their friends, what money is required to be advanced; the boy's father then returns home, and after a lapse of a few days he brings with him the necessary number of rupees, accompanied by one or two friends.

The parents of both children, and a few of their relations now go to the house of the Brahmun astrologer and having sat down near the entrance ask him to come out. Upon his joining them the father of the girl having announced the object of their visit, informs the Brahmun that his daughter's name* is Oomy, or Bhaggy, and also the boy's name is Goomajee or Khundoojee.

The Astrologer† then consults his Punchung, (almanac,) and will probably inform them, that their nuptials cannot be celebrated in the months of Magh and Phalgoon, for that the configuration of the stars, planets, &c. is such as to prove adverse to its taking place in those two months, ‡ but either in Vyshak or Jesth the day shall be calculated for them. Upon hearing this answer from the Brahmun, the parents return to their respective homes.||

At the termination of the stipulated time, the boy's father repairs again to the house of the girl's father, and tells him to get the required document from the Brahmun. They accordingly proceed to the priest's house, who now makes his caculations and writes on a

* Should the name given when casting their horoscope at their nativity be forgotten, the name they are actually known by is communicated.

† The Astrologer, is termed the Bhutt or Jossy of the village. It is an hereditary appointment and he receives his huk or perquisite as one of the four members of the third or inferior class of the twelve Ballottah. The Koolkurny, holds also the appointment of Jossy, in some villages. My friend Ram Row Baba Sahib the Poorundury chief is Koolkurny and Jossy of the town of Sassoor, but being a man of rank he employs a deputy.

‡ Should the parties be very anxious from some pressing cause to celebrate the marriage in one of the first mentioned months, the Brahmun will inform them that the obstacles in the way may be removed either by Dan, Hom, or Jup. The first is the bestowing alms, the second making a burnt offering when the officiating priest is presented with a fee: and the third is repeating extracts from the Veds and mumbling certain incantations, for which trouble the Brahmun gets a present of six or eight annas or a rupee or two, according to the inclination and means of the parties.

|| It is to be noticed, that it is the Astrologer of the village in which the girl resides who is consulted on such occasions, and that it is always in the house of the bride that the marriage is solemnised.

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piece of paper the names of the party, and the hour, the day, and month are inserted on which the ceremony is to take place. The Brahmun, having put some Koonkoo on the paper, gives it to the father of the girl, who hands it over to the father of the boy. The Brahmun is now requested to inform them of the proper time for applying or rather besmearing the boy and girl with Turmeric, upon which the Brahmun tells them the day they are to apply the Hullud, (Turmeric.) The parties then ask the Brahmun to tell them who is to apply it. It is considered necessary to have a near female relative to begin this ceremony, after which, the others join in it. The priest is presented with four or five pyce and the parties return to their homes.

On the day fixed for going through the ceremony of besmearing the boy and girl with the Hullud, the parents give the necessary directions. Several female relations having assembled, a small quantity of the powder of Turmeric is put into a flat dish and diluted with water. The boy is stripped naked and the mixture applied to the whole of his body, in the first instance by the female relations pointed out by the Jossy, the other women in attendance subsequently assisting her in the operation. When he has been well bedaubed with the mixture, they set to work to wash it off again. Notwithstanding the subsequent ablution, the body retains a yellowish colour, which stains the boy's wearing apparel. During this ceremony, a band of native musicians keep playing in front of the entrance of the house. The Hullud remaining in the dish after the boy has been besmeared is sent to the house of the father of the girl, while music plays in front of the small procession that accompanies it. Should the distance be eight or ten miles, a man is sent with it, but should it be from thirty to fifty miles, the boy's father purchases a small quantity of Turmeric which he gives to the girl's father, at the times, when the Jossy announces to them the day on which the ceremony should take place.

On the same day that the Hullud takes place, a piece of cloth is died yellow with Turmeric likewise a small quantity of Jowary* or Jondly. A hull koond, or entire root of Turmeric, which has a knot, or branch, termed lekurwalla, (that with the offspring) is specially selected on this occasion. Both these articles are tied up in the piece of cloth, which is then fastened round the neck of the stone handmill used for grinding corn. Five married women are now employed to prepare the ghanna, which is about

* Holens Saccharatus.

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a pound of flower, ground from the necessary quantity of wheat, jowary, and termeric, from which a few cakes of bread are prepared, by the same women.

They then procure from a field, five ears of jowary, round which they tie a thread and then cover the bunch (joombra) with some black earth. It is afterwards placed in an upright position, near their household gods, and as it is daily sprinkled with water, it soon vegetates most luxuriantly.

During the time the boy resides in his father's house, after he has undergone the Hullud ceremony, and, until he quits for the purpose of celebrating his marriage, he is invited successively by all his relations, and persons of his caste, and entertained by them. This in fact, to him, is a period of constant feasting; he is attended by music, and his sister, if she is a young girl, or child, accompanies him. Should he be straitened for time, owing to the near approach of the nuptial day, he will partake of entertainments at the houses of four or five of his friends in one day. The feast consists of the most dainty dishes their means will admit of providing. The boy undergoes ablution, and has a little Hullud rubbed on him, in the house of each person, before he sits down to the feast prepared for him.

A temporary shed is now constructed in front of the house; it is formed of a few posts, and some rafters thrown across them, over which a sufficient quantity of green branches of the mangoe tree, oombur or jambool, are spread to afford defence from the weather.

The ceremony of worshipping their household gods is now performed in the mandwah. Four soopary (nuts) are taken to represent their deities, Khundoba, Bhyrobah, Bhugwuntty, (Bhoany,) and Nonllaie. The nuts are consecrated by casting some bhundar and koonkoo over them, and at this time a sheep is sacrificed* in front of the mandwah, to propitiate matters. Two or four are killed, or as many more as the circumstances of the family will admit of, or, according to the number of guests they wish to invite to the evening banquet. During the day, the gooroo, or attendant of the village temple, is required to procure a small branch with leaves on it, of each of the following five trees :† the 1st mangoe, 2d oombur, 3d jambool, 4th rooie, and the 5th soundur or shemy, also a few stalks of the grass called, sooreath, or rossy, which he takes to

* No sheep are killed by the Shoodurs during this ceremony.

† 1st Magnifera Indica, 2d Ficus Glomerata, 3d Calyphranthes, Caryophilli folio, 4th Asclepias Giganticus, 5th Mimosa Suma, 6th Andropogon Schananthus.

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the temple of Hunooman and deposits there. To procure these, the boy's father, an elder brother, or an uncle accompanied by his wife, proceeds to the temple, for which purpose the woman is provided with a basket, in which is placed, a koorhar, (a small hatchet,) and the ghanna bread formerly described; the husband having tied the corner of his own hottur to that of his wife's sary, four men support a spread cloth over their heads, by way of a canopy, under which they move in procession, with music, from the mandwah to the temple, where a soopary (nut) and five betel leaves are placed before the shrine, and blessings supplicated. Then the branches of the mangoe tree, &c. are deposited in the basket, and the party return in the same manner to their home. The contents, of the basket, namely the hatchet, bread, grass, and branches are tied together with a string or piece of rope, and fastened to one of the front posts of the mandwah, five or six feet from the floor. This is what is termed the dewuk or the representation of the superintending powers that preside at nuptial ceremonies.

Early in the evening they sit down to the feast prepared for them, at which a small quantity of arrack is served out: but this is the only meal at which they partake of animal food or spirits, during the continuance of the marriage ceremonies, as the mandwah is considered to be consecrated from the dewuk having been placed there. On this night they have the gondull ceremony, which consists in a recitation and chanting with music of legends, and old stories of some former celebrated Princes. The instruments in use are of three descriptions;—first the sumball, 2d the taall, and 3d toontoona. Previously to the gondull beginning, the boy's father procures five stalks of sugar cane; if these are not to be had, five stalks of jowary are taken as a substitute, and five cakes of wheat bread, that have been fried in oil; to each of the stalks of sugar cane a cake of bread is fastened by a loose string, so that when the bunch of canes is placed upright on the floor, and the lower ends extended to some distance from each other, the cakes become suspended in the middle: a quarter of a seer of bajeeree grain, and the same quantity of wheat is placed on the floor immediately under the cakes. This grain is shaped into a square platform figure, and lines being drawn across from opposite angles to divide it into four divisions, a copper pot, filled with water, is placed on the grain, and a piece of cocoanut, a soopary (nut,) and five betel leaves, are deposited on the mouth of this vessel; one of the gondully's iron lamps is put in requisition and placed near the

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copper pot, after which the gondull ceremonies* commence. Many of the inhabitants attend during the performance of the gondull; a particular distribution is subsequently made of the canes and cakes of bread,† &c.

It must be stated, that the father of the girl erects a mandwah, or shed, in front of his house, and performs ceremonies similar to all those above related; and on the day fixed for the marriage, or the preceding one, the girl's father raises a platform of earth in the mandwah, which is termed the boulay. It should be seven cubits in length, according to the measurement of the girl's arm. There is a step on the eastern face of this altar, for the convenience of ascending and descending. The boulay is placed as nearly opposite to the entrance of the mandwah as possible, and previously to the arrival of the bridegroom, the village potter brings the huradera; this consists of ten earthern pots of sizes, with covers for two of them: these pots had been beforehand white washed with lime, and sprinkled with some red, green, and yellow colours. The potter places five of these vessels, one above the other, (putting the covers on the mouth of the uppermost,) close to the angles of the altar, on the opposite side to that on which the step is. A large earthern vessel called a runjun, for holding water, is placed near the entrance for the use of the relations and persons of the caste, and a piece of yellow cloth, in which a soopary and a piece of turmeric is tied, is fastened round the neck of the runjun for good luck.

The bridegroom, dressed in his best attire, which is generally red, prepares to proceed with his party to the house in which the bride resides. He has a coronet or chaplet made of paper of a yellow or red colour, ornamented with tinsel, &c. on his head, instead of a turban. This ornament is termed bashinggy.‡ He provides one of the same description to be presented to the bride. It matters not whether the bride's house be in the same village or not. The bridegroom's party quit their home, so as to reach the temple of Hunooman, in the village where the bride lives, about an hour before sun set, on the day fixed for the marriage. The bridegroom always travels on horseback. Having moved in procession, and paid his devoirs at the shrine of Hunooman of his village, armed with his dagger, he mounts his horse, and, surrounded by his friends, takes

* The Shoodurs have this ceremony six or eight days before this.

† The gondully receives a rupee, and food for his trouble.

‡ The Brahmuns do not make use of a bashinggy, all the other castes do. The former wear a mundoly or chaplet of flowers only, while the other castes frequently use both.

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his departure for the house of the bride. When they arrive at the temple of the village where she is, the bridegroom's brother, or a near male relative, who is termed the wurdawah, proceeds on horseback, accompanied by a few friends and music, to the bride's house, to announce the arrival of the bridegroom. The wurdawah is asked to dismount, and invited inside to partake of some food: accordingly a dish of sewy* with milk is placed on a small stool before him, and while he is eating of this fare, it is customary for a young brother or sister of the bride's to approach him for the purpose of playing him some trick, by drawing away the stool gently, and letting the dish fall upon the floor, while they get some peppers (crisp cakes of ooreed) to break over his head and pelt him with, until he is glad to retire from the house. After the wurdawah has rejoined his friends, the bride's father, accompanied by several of his male and female relatives, attired in their best clothes, and preceded by a band of music, go to the temple to pay his respects to the bridegroom and invite him to his house. This party or procession is termed the shevutty. When the shevutty enter the temple, they present the bridegroom, with a turban, a selah, and a pair of shoes. Then the bridegroom taking his dagger in his hand, mounts his horse, and a young sister, or girl (a near relation) is placed on horseback behind him; she is designated by the term kurrolly, and carries on her head a small copper pot containing the joombra (the five ears of jowary which has now put forth luxuriant shoots) Several of the men and boys of the party with chollies, selahs, &c. of bright colours, tied to the ends of their sticks, which they hold upright in their hands, move slowly along in procession with music: the females cast grains of jowary steeped in turmeric at the bridegroom, until they reach the mandwah in front of the bride's house; upon which a female, with a pot of water on her head, comes out of the house to meet the bridegroom.† The mother of the bride having made a lamp of wheat flour paste, and furnished it with oil and a wick, lights it and places it in a brass salver, and going outside of the entrance of the mandwah, and looking at her intended son-in-law, she waves the lamp repeatedly with a circular motion,‡ upon

* Vermicelle, a very common dish among the natives on festivals, &c.

† They have a verse in which is mentioned what is reckoned fortunate to meet or see out of a house, &c.

‡ It is a very common practice with the females in India, to welcome a popular man or person of rank upon his approaching a village; the wives and daughters of the village watchman, &c. advance to greet him, the elder matron leading the way.

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which the bridegroom presents his mother-in-law with a sary or a chollie, and, dismounting, he enters the mandwah, followed by all his friends. The Brahmun who is to perform the marriage ceremony now enters the mandwah, a short time before which, two small heaps of rice had been placed at a little distance from each other, and near the boulay. The Brahmun gives directions for the sheet or curtain which it is customary to place between the bridegroom (Wurr) and the bride, (Wuddoo,) to be held up by those whose duty it is to do so; and it is placed so as to separate the two heaps of rice. The bridegroom is now made to stand on the eastern one, with his face to the west, and the bride having been brought from within the house, is made to stand on the western heap facing to the east. The bridegroom holds his dagger in one hand, and a cocoanut in the other, and one of his relations stands close by him holding a naked sword over his head. The bride stands with her hands in a supplicatory position, her maternal uncle standing behind her. The Brahmun now repeats the mungulastick formula, (a blessing on the ceremony;) and when the (supposed) moment fixed for uniting the parties in marriage arrives, (the moorth,) the curtain is removed, and the bride gives her hand to the bridegroom. The music begins to play, and guns are fired. The bridegroom is now made to sit down on the heap of rice that had previously been occupied by the bride, while the latter sits on that on which the bridegroom had been standing: all those persons who had attended the ceremony as guests, take their departure after being presented with paun soopary.

The Brahmun takes after this a thread of a very considerable length, which he casts four times round the neck and shoulders of the young couple, throwing the thread round them an equal number of times somewhat lower down and near the loins. He now asks for his customary fee,* which is presented according to the means of the party; after receiving which he breaks the thread, and taking off the upper part first, he steeps it in a solution of turmeric, and then, folding and twisting it, he ties a piece of turmeric root to it, and fastens it on the bridegroom's right wrist. The other half of the thread is fastened in a similar manner round the bride's right wrist. This is called putting on the kunkun or bracelet. The bride's father now places the munic† in the bridegroom's

* A few pyce, if the man is poor, but as many rupees, if rich.

† By the Brahmuns called mungulsootur. It is used by the Hindoos as we use the marriage ring.

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hand. This consits of three or four yellow coloured threads, with two golden beads, and five of dark coloured glass. The bridegroom fastens the munic round the bride's neck, and it is not afterwards removed, unless she becomes a widow. Two silver rings, called jorvee, are put on two of the toes of each of her feet at the same time; after which, the ceremony of kunnea dan, or bestowing the maiden, takes place. A brass dish, or bason, is brought, and a small copper pot with water, which the bride's mother pours out on the bridegroom's feet, and the father-in-law washes them. When they have thus bathed his feet, the bride's mother, bowing down, places her head on the bridegroom's feet, and tells him that she has delivered her daughter over to him. The Brahmun is again presented with a dukshuna, or small sum of money, after which he tells the young couple to ascend the boulay or altar; accordingly the bridegroom takes his bride up, and places her astride* on his hip joint, and advances to the altar, placing his right foot first on the step, and both of them sit down on the boulay, the bridegroom being on the right. Some stalks of sooratie,† or sunkarie,‡ are now brought, and these being set fire to, the home ceremony, or burnt offering is made; this is done in the present instance by the bridegroom's taking some ghee, or clarified butter which he casts on the fire to burn, the bride having so far assisted as to touch his hand with hers at the time. The bridegroom takes up the bride again, and performs the prudukshina, or circumambulates the burnt offering five times, upon which the parties sit down. Shortly afterwards, the Brahmun directs them to go into the house and prostrate themselves before the household gods, and such of their parents as may be inside. However, previous to their moving off the boulay, the Brahmun, or one of their relations, ties the bridegroom's dhottur to the bride's sary; after a little, the knot is untied by one of the female relations inside, when she has obtained a promise from the bridegroom that he will present her with a sary, or a chollie; after which they return and sit down on the boulay. An entertainment, which had been prepared, is now served out to all the relations and persons of the caste, who sit down in the mandwah to partake of it. The bridegroom and the kurrolly (his sister) sit on the boulay, and have a dainty dish or two presented to them; the bride accompanys the other females into the house, for

* Children in India are always carried about in this manner by their mothers, until they have attained the age of two and three years.

† The Citysus Cajan. ‡ The Crotobaria Juncea.

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they all dine inside. The guests now request the bridegroom to begin to eat of the dish he has before him, and he to give them permission to do the same. When they have finished their meal, the guests return to their own homes, those of the bridegroom's party proceed to the janooswarah, or the house allotted for them to remain in during their stay in the place. The bridegroom remains with a few friends all night in the mandwah. The following morning the young couple, being both mounted on the same horse, go to the river or village well, accompanied by music, and after having washed themselves, and the bride put koonkoo on her forehead, they return to the mandwah. Warm water is prepared for both of them to bathe, the bride's sister assisting them in performing their ablutions. The young couple amuse themselves by squirting water from their mouths at each other, and the sister-in-law does not always escape from sharing in the sport; she now brings a soopary (nut) and puts it into the bride's hand, and then pours some water over it, after which, she tells the bridegroom to open the bride's hand, with one of his own, and to take the nut from her, which he does with much difficulty. The bridegroom now holds the nut in his hand, and the bride is told to take it out of his hand, using only one of her own, but being unable to do so, she applies both hands to perform the task. When they have put on dry clothes, and hullud and koonkoo on their foreheads, all the party sit down to partake of some breakfast. The bridegroom and bride eat theirs sitting on the boulay, the women theirs in the inner apartment, or in the mandwah, after the men have finished.

The same day, in general the second of the marriage ceremony, the bridegroom gives an entertainment at the janooswarah to the bride, her relations, and friends. About noon the bride's mother, accompanied by a few female relatives and the village washerman, go to the janooswarah, preceded by music, to invite the bridegroom's party to the mandwah, to see the sary phull (the clothes, &c.) given away. When all the women are ready to quit the janooswarah for the mandwah, in company with the bride's mother, the village washerman spreads a sheet on the ground near the door, and the females walk over this, while the washerman is laying down another sheet; after which, he takes that up over which they have passed, and places it again in front. They progress in this manner all the way to the mandwah, the bridegroom and the male part of the procession following at a short distance. The washerman receives a sary, or a chollie, to present to his wife for his trouble.

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The bridegroom's father takes the following articles with him to the mandwah on a copper platter :—a sary, a chollie, a phurky, a few jewels, paan, soopary, five pieces of cocoanut, five dates, a half seer (a pound) of rice, a seer of wheat flour, and a seer of course sugar. The village Bhutt (a Brahmun priest) is in attendance, and is presented with a rupee or two; this is termed the mandwah khundny or fee. The Patell of the village is presented with a passoury, or turban, or in lieu of this four or six annas, such being his perquisite. To the other Hukdars (Desmoks, &c.) paan soopary is presented. The Dheres and Koley receive a few annas for their labour in bringing firewood, and water; the clothes &c. intended for the bride, are now placed in her lap, when the bridegroom and bride sit down near each other, and all the relations and persons of their caste advance near them in succession, with a few grains of rice in both hands, which they drop on their heads; then taking a pyce, they wave it round the heads of the young couple, after which the pyce is given to the village gooroo, who is sitting close by with a plate to receive the money.

Such of the relations of the bridegroom as can afford to present his parents with turbans, saries, money, &c. do so now, and the relations of the bride present her parents with clothes, money, &c. according to their capability. The bride's father after the above mentioned ceremonies, presents the bridegroom with a small copper pot and a dish. The musicians keep playing in front of the mandwah during all this time; and in the evening the bridegroom and bride, being seated on the same horse, proceed to the janooswarah accompanied by music. Here all the party partake of a feast that has been spread out for them. The bride remains all night in the janooswarah with the bridegroom and his friends, one of her relatives stopping near her. The bridegroom's party, with his young bride, set out the following day for their home, accompanied by a near relation of the bride's. Upon their reaching the temple of Hunooman, with the exception of two or three friends who remain in the temple with the young couple, all the others return to their homes. In the evening the relations and friends assemble, and being provided with torches, &c. they join the party at the temple, when the bridegroom and bride are mounted on the same horse. The procession being preceded by music, advance to the bridegroom's house. This is termed the wurat. The bride remains here eight or ten days, after which she in general returns to her father's house; this depends a good deal on her age, and the distance she

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may have to go. The relation that accompanied her, if a male, gets a turban as a present, and if a female, she is presented with a sary.

The more wealthy Naiks about Poona sometimes expend from three hundred to five and six hundred rupees in marrying one of their children, but in general the marriage ceremony is not so expensive, seldom above forty or fifty rupees, and in many instances, as low as fifteen and twenty-five rupees.

The clothes and few ornaments required for the bridegroom and bride cost from twenty to thirty rupees, and entertaining their friends and persons of their caste, about twenty more, the expense being defrayed equally by both parties. The musicians get about five rupees.

The expenses attending a second marriage (the paat or mhottur) with a widow, including the fee to the Brahmun, and feasting the relations, average from twenty to thirty rupees.

The paat or mhottur ceremony, may be celebrated in any month or day in the year, except when offerings are presented to the manes during the peetur paat, (the krishun puksh or 15 dark nights of the month Bhadrapuddah), provided any of the lucky stars should prove to be luggun nukshutturs, and corresponding with the rules of the paat chukkur.

## CHAPTER VII.*

**The months in which the marriage ceremonies are celebrated, with other observations respecting lucky periods.—The caste of the boy and girl investigated, whether lucky or unlucky.—Examination into thirty-six properties.—Various calculations on the Nukshuttur and the Zodiacal signs.—The Nukshutturs that are considered auspicious for consummating the nuptial ceremonies.—The Nukshutturs excluded in consequence of the proximity of any evil planet, eclipse of the sun or moon.—The meuirty yeog explained.—Ooapat yeog explained.—The unpropitious conjunctions, or Dugdhu Yeog.—The Amroot Seedh Yeog.—The Nukshutturcha bedh.—The year divided into six seasons, ceremonies postponed on account of an eclipse of the sun or moon.—Earthquakes, meteors, &c.—The Gundants.—Chunda Yeogs Elkargulldosh.—The Waardosh.—Tke Koolick.—The Kuntik Kall**

* That portion of the Hindoo system of judicial astrology applicable to their nuptial ceremonies, and which I have endeavoured to explain here, has been taken, with a few exceptions, from a Sanscrit work called the Moorth Martind.—In the copy of the work from which it was extracted there may be a few inaccuracies, and I may have failed occasionally in conveying the sense of the original; but as several intelligent Brahmuns and astrologers were consulted in preparing it, I am disposed to think it is tolerably correct.—A few of the rules considered most unimportant have been omitted, and others a little curtailed, under the impression that to the general reader, the subject might seem much too tedious.—Most of the village Jossies can repeat all these proceedings by heart.

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**vellah.—The Kranty.—The Kendall.—The Wukury.—The Punchuk.—Concluding observations.—Remarks regarding their funeral rites.—The naming of their children, with a description of the Oukkur Chukkur, and the mode of determining their names.**

The five following months, Margysur, Magh, Falgoon, Vysakh, and Jesth, are those in which the Hindoos solemnize their marriage ceremonies, likewise in the beginning of Ahkhar (Ashar) to the north of the Godavery, and south of the Kristna. But at the temple of Triputty (Ballajee) in the Karnatic, the ceremony may be performed during any day in the year, excepting the peetur paat or fifteen days while offerings are presented to the manes of their ancestors.

Should the boy and girl have both been born in the month of Jesth, the ceremony cannot be solemnized in that month, and should only one of the party has been born in Jesth, it will not be advisable.

During the period of occultation of the planets Jupiter and Venus, no marriages are celebrated, nor during the Anwass, (last day of the moon,) nor at the Sunkrant (the time the sun passes from one Zodiacal sign to another, nor at the Sheowust, when the planet Jupiter is in the constellation Leo,) which takes place once in twelve years.

The class or caste of the boy and girl, also their freedom from fault, or rather their good and evil fortune, is inquired into. This is rather a lengthy examination into thirty-six properties or qualifications said to be derived from the eight following:

| | | | | |
|---|---|---|---|---|
| 1st The Wurrun, | class or caste | possesses | one | property |
| 2d The Wussh | Subjection | do. | two | do. |
| 3d The Bhatara | Constellation | do. | three | do. |
| 4th The Yeonie | Birth | do. | four | do. |
| 5th The Kechur or Ghru | Mischievous | do. | five | do. |
| 6th The Gun Mytry | Indentity | do. | six | do. |
| 7th The Bhukoot | Amity and hostility of the signs | | | do. |
| 8th The Nardy | Separation | do. | eight | do. |

These being added up give thirty-six qualifications.

Now they say the Wurrun is divided in the following manner, allotting three of the twelve Zodiacal signs to each class.

First, To the Brahmun, Pisces, Cancer, and Scorpio.

2nd, To the Ekxchutry they assign Aries, Leo, and Sagitarius.

3rd, To the Vyse they give Taurus, Virgo, and Mukkur, or Capricorn.

4th, To the Shoodur, Gemini, Libra, and Aquarius.

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Should both the boy and girl have been born under any of the three signs allotted to one of the classes, it will be considered a happy conjunction. If the boy has been born under a sign allotted to a class superior to that in which the girl is, the marriage will be reckoned fortunate, but should the sign under which the girl has been born, be allotted to a class superior to that in which the sign of the boy is to be found, the marriage will not be considered auspicious, although such take place. The female, it is said, will under such circumstances rule the roast; certain penance is necessary at the time of the nuptial ceremonies to propitiate matters.

We have another division of the Zodiacal signs to explain the properties of the Wussh, as follows:

1st, Of the nature of man, or formed by him,—Virgo, Libra, Gemini, Aquarius, and half of Sagitarius.

2d, Of the nature of quadrupeds,—Aries, and Taurus. The half of Sagitarius and half of Mukkur (corresponds with Capricornus.)

3d, Of a watery nature, Cancer, and Pisces, and half of Mukkur.

4th, Of the desert, or a wild nature, Leo.

5th, Of the nature of insects, Scorpio.

Should the boy or girl be born under either of the signs as they are classed in the first division, or any of the other divisions, their marriage will be considered fortunate; but if the parties were born under signs classed under different natures, they will only share half the blessings and comforts of the marriage state. It is said strife and enmity, misery and distress, will attend them through life. As Leo and Scorpio are looked upon as being enemies, evil consequences are much dreaded; and an union between those born under them is to be avoided.

The Bhatara. This is determined by a particular calculation of the 27 Nukshutturs or stellar mansions. In the first place, we must count the number of stellar mansions from that under which the boy was born, to that of the girls, and again reckon forward, from the latter to that of the boy's (viewed as a circle); after having ascertained this, the number must be separately divided by nine, and if a balance of equal numbers, as 2, 4, 6, 8, remains after such a division, it is considered fortunate, but if the balance be 3, 5, and 7, such is looked upon as detracting from the fortunes of the party.

We have now to explain the properties of the Yeonie. It is necessary to give here the names of the Nukshutturs, or stellar mansions, observing that in their usual computations they only reckon twenty-seven, although there is in all twenty-eight, that commonly

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excluded being Abeejeet, but enumerated in the present calculation. To each Nukshuttur they assign an animal, then by an analogical comparison between these, they conclude the bride and bridegroom will be happy or otherwise, according to the star under which each was born, and the characteristic disposition and habits of the animals symbolical of them. As we may have occasion to refer in future calculations to the Yeonie, I have numbered the Nukshutturs.

| | | | |
|---|---|---|---|
| 1st | Asswin | represented by | A horse. |
| 2d | Bhurny | do. | An elephant. |
| 3d | Kritika | do. | A sheep. |
| 4th | Rohiny | do. | A snake. |
| 5th | Mirgh | do. | A snake. |
| 6th | Arrudrah | do. | A dog. |
| 7th | Poonurwussoo | do. | A cat. |
| 8th | Pooshea | do. | A sheep. |
| 9th | Asslesha | do. | A cat. |
| 10th | Muggah | do. | A rat. |
| 11th | Poorwah | do. | A rat. |
| 12th | Ootturra | do. | A cow. |
| 13th | Hust | do. | A buffalo. |
| 14th | Cheetturrah | do. | A tiger. |
| 15th | Swatty | do. | A buffalo. |
| 16th | Vysakh | do. | A tiger. |
| 17th | Annooradah | do. | A deer. |
| 18th | Jestha | do. | A deer. |
| 19th | Moolh | do. | A dog. |
| 20th | Poorwah Asshara | do. | A monkey. |
| 21st | Ootrah asshara | do. | A mungooss. |
| 22d | Abbeejeet | do. | A mungooss. |
| 23d | Shrawun | do. | A monkey. |
| 24th | Dhunnista | do. | A lion. |
| 25th | Shuttoo Tarika | do. | A horse. |
| 26th | Poorwuh Bhadrapudda | do. | A lion. |
| 27th | Ootrah Bhadrapudda | do. | A cow. |
| 28th | Reewuty | do. | An elephant. |

They now state, that an enmity exists between the tiger and cow, between the horse and the lion, and between the horse and buffalo, likewise between the dog and deer, the monkey and sheep, and mungooss and snake, and the cat and rat, so that a marriage being solemnized between parties that were born under inimical signs,

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cannot enjoy the four qualifications assigned to the Yeonie. Therefore a proportionate degree of unhappiness must follow, when such an unpropitious event occurs.

The Ghru Myttry. This is a calculation connected with the signs of the Zodiac, as they assign to the different constellations of the Zodiac, certain swamys or regents possessing due influence; these are the different planets which they dispose of in this manner.

| | | | |
|---|---|---|---|
| To Aries and Scorpio | they give | Mars as | Regent |
| To Taurus and Libra | do. | Venus | do. |
| To Gemini and Virgo | do. | Mercury | do. |
| To Cancer | do. | The Moon | do. |
| To Leo | do. | The Sun | do. |
| To Sagitarius and Pisces | do. | Jupiter | do. |
| To Mukkur, (Capricorn,) & Aquarius | do. | Saturn | do. |

It is said a certain degree of friendship, indifference, and enmity, exists between these regents. For instance, that the Sun regards Mars, the Moon, and Jupiter as his friends; that he views Mercury with indifference, and Venus and Saturn with enmity.

The Moon reckons the Sun and Mercury her friends, and regards Saturn, Mars, Jupiter, and Venus with indifference.

Mars counts the Sun, Moon, and Jupiter among his friends; he is indifferent to Venus and Saturn, and an enemy to Mercury.

Mercury's friends are Venus and the Sun; he views Saturn, Mars, and Jupiter, in a medium light, and he is hostile to the Moon.

Jupiter considers the Sun, Moon, and Mars his friends; and is indifferent to Saturn, and inimical to Venus and Mercury.

Venus reckons Mercury and Saturn her friends; she is indifferent to Mars and Jupiter, and bears enmity to the Sun and Moon.

Saturn has Venus and Mercury as friends; he is indifferent to Jupiter, and is inimical to the Sun, Moon, and Mars.

Here a reference is made to the Zodiacal signs under which the boy and girl were born. And should it prove that the regent of their respective natal signs are friends, they will enjoy the five qualifications of the Ghru Myttry. But should the one regent be friendly and the other indifferent, they will only enjoy four of these qualifications. And should they be both of a medium, or indifferent nature, they will enjoy only three; should the one regent be friendly and the other hostile, they will only enjoy one of these properties.

The Gun Myttry. This they divide into three divisions, to which certain advantages and disadvantages are apportioned. First, there

is the Deogun, or divine nature; secondly, the Munoosh gun, or human nature; thirdly, the Rakshuss gun, or the diabolical nature; of the 27 Nukshutturs, nine are appropriated to each of these three guns, or qualities. To the Deogun belong the following Nukshutturs (See the yeonie):Nos. 1, 5, 7, 8, 13, 15, 17, 22, and 28. To the Munoosh gun they allot Nos. 2, 4, 6, 11, 12, 20, 21, 26, and to Rakshuss gun the Nos. 3, 9, 10, 14, 16, 18, 19, 24, 25.

They now say that if the boy and girl were born under stars of the same division, they will enjoy the six qualifications of the Gun Myttry; but one being of the divine, and the other of the human nature, they will only partake of five of these properties; should the girl be of the divine and the boy of the diabolical, they will enjoy only one qualification; but one being of the diabolical, and the other of the human nature, should not be united in marriage, although such an occurrence sometimes happens, when the horoscope of either of the parties has been lost, or through the ignorance of the astrologer it has not been correctly cast, so that great misery and unhappiness, it is supposed, will take place.

The Bhukoot. This depends on a calculation of Zodiacal signs. Reckoning from the sign including that under which the boy was born, to that of the girl's sign, and from the latter to the former, in a forward calculation. It is by no means advisable, that the numbers intervening on either side should be 2 and 12, 5 and 9, and 8 and 6. If 2 and 12 exist between them, they will be doomed to much misery and poverty, and if 5 and 9 exist, they will have no offspring, and should 8 and 6 be the intervening numbers, premature death will be the consequence, but from the even numbers 2, 4, 6, 8, 10, and 12, should 6 and 8 arise, it will prove fortunate.

The only way of escaping from these misfortunes, is the circumstance of the boy and girl being born under the same zodiacal sign, but under separate asterisms; and should they be born under the same asterism, it must be at an earlier or later period of it, not in the same churn or division of time. Secondly, both being born under the same sign, or both having separate signs, but these signs having the same regents, is propitiatory. Even should their signs have different regents, and these should be friends, fortune will favour them. But to remove the evil consequences arising from odd numbers, and 6 and 8 numbers intervening, 2 cows and 16 maashahs of gold (about £ 2) must be bestowed in charity to the Brahmuns, and if the numbers 5 and 9 intervene, a metal dish and a small piece of silver must be given to the priest—in all forty Ru-

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pees value. The Nos. 2 and 12 intervening, they must pay divine honours to the priest, and present him with a small piece of copper and a small piece of gold.

The Narry, or Nardy. This is a calculation on the Nukshutturs, in three divisions of nine Nukshutturs each, as follows, (see the yeonie,) as numbered, including Abbeejeet.

1st, Nos. 1, 6, 7, 12, 13, 18, 19, 24, and 25.
2d, Nos. 2, 5, 8, 11, 14, 17, 20, 23, and 27.
3d, Nos. 3, 4, 9, 10, 15, 16, 21, 22, and 28.

Should the Nukshutturs, both of the boy and girl, be in the first division, the boy will be doomed to destruction if they are married. If both of their Nukshutturs be in the second division, both the girl and boy will suddenly die ; and if both their nukshutturs happen to be in the third or last division, sudden death is prognosticated.

Neither the lunar day on which the girl and boy were born, nor while their natal stars prevail, are to be fixed on for solemnizing their marriage ceremony. In making these calculations it is necessary that these should be carefully rejected. Should the Nukshuttur selected be fortunate, still in the event of the pap ghru (evil planet) prevailing, this Nukshuttur must be rejected.

The following are the Nukshutturs reckoned auspicious for consummating the nuptial ceremonies: Rohinny, Mirgh, Ootura, Hust, Swaty, Annooradah, Moolh, Ootürahshara, Ooturabhadrapudda, and Rewutty.

Whatever Nukshuttur the evil planet Rahoo (the ascending nod) is near, such Nukshuttur is not eligible for solemnizing the marriage ceremony until Rahoo has retired.

Whatever Nukshuttur is dominant the day or night on which a full eclipse of the sun or moon takes place, such is excluded from their calculations for six months, a half eclipse three months, a quarter eclipse one month.

Whatever Nukshuttur Saturn happens to be near, such nukshuttur is excluded from the calculation for four months, or until this planet has retired from it.

Whatever Nukshuttur Mars happens to be near, is excluded from their calculations until Mars has retired.

When the following Nukshutturs coincide with the days of the week set down opposite to them, the circumstance is supposed to produce the most calamitous consequence, and termed Meuirty yeog.

| | | |
|---|---|---|
| Sunday | having | Annooradah. |
| Monday | do. | Ooturasharah. |

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| | | |
|---|---|---|
| Tuesday | having | Shuttoo Tarika. |
| Wednesday | do. | Asswiny. |
| Thursday | do. | Mirgh. |
| Friday | do. | Asslesha. |
| Saturday | do. | Hust. |

A marriage therefore is not solemnized on such occasions; and they avoid, as much as possible, commencing any undertaking of a spiritual or temporal nature on such a day.

Next follows the Ootpat yeogs, (portentous of evil;) these are various stars for the days of the week.

| | | |
|---|---|---|
| Sunday | having | Vissakh. |
| Monday | do. | Poorwah Ashara. |
| Tuesday | do. | Dhunnestah. |
| Wednesday | do. | Rewutty. |
| Thursday | do. | Rohinny |
| Friday | do. | Poosh. |
| Saturday | do. | Ooturra.. |

There is then the Dugdhu yeog, (the unpropitious conjunction,) for if certain days of the month fall on particular days of the week, it is considered rather inauspicious to commence the bridal ceremony; but it is considered of great importance in other affairs, for instance,

| | | | | |
|---|---|---|---|---|
| 1. | The | 3d | falling on a | Wednesday |
| 2. | ,, | 5th | do. | Tuesday. |
| 3. | ,, | 6th | do. | Thursday. |
| 4. | ,, | 8th | do. | Friday. |
| 5. | ,, | 11th | do. | Monday. |
| 6. | ,, | 9th | do. | Saturday. |
| 7. | ,, | 12th | do. | Sunday. |

Then follows the Amroot Seedh yeog, which is esteemed a most happy and desirable conjunction (partaking of Ambrosia.) Here again certain Nukshutturs are assigned to certain days of the week.

| | | | |
|---|---|---|---|
| To | Sunday | we have | Hust. |
| ,, | Monday | do. | Mirgh. |
| ,, | Tuesday | do. | Asswin. |
| ,, | Wednesday | do. | Annooradah. |
| ,, | Thursday | do. | Poosh. |
| ,, | Friday | do. | Rewutty. |
| ,, | Saturday | do. | Rohinny. |

The Nukshustur-Cha-Vedh. Under this head we have a list of

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Nukshutturs supposed to possess malign influence, should the boy and girl have been born under them as they are classed below.

| | | |
|---|---|---|
| Ooturah shara | and | Mirgh. |
| Bhurny | ,, | Annooradah. |
| Rohinny | ,, | Abbeeject. |
| Muggah | ,, | Shrawun. |
| Rewutty | ,, | Ootura. |
| Poonurwussoo | ,, | Moolh. |
| Shutoo Tarika | ,, | Swatty. |
| Ooturab hadrapuddah | ,, | Hust. |

If a malign planet approaches either Nukshuttur, no ceremony can be solemnized during this time.

There is a calculation of the Zodiacal signs to be recorded here, which it is necessary to have recourse to when fixing the particular time for celebrating the ceremony. The twelve Zodiacal signs under these circumstances are termed Lugguns (there are 6 during the day and 6 during the night) of conjunction or marriage; and as the day and night is divided into sixty ghutkas, (Hindoo hours,) they apportion a certain length of time to each luggun or sign, as follows:

| | | | | |
|---|---|---|---|---|
| To | Aries | number of | Ghutkas | 4 |
| ,, | Taurus | do. | do. | 4½ |
| ,, | Gemini | do. | do. | 5 |
| ,, | Cancer | do. | do. | 5½ |
| ,, | Leo | do. | do. | 5½ |
| ,, | Virgo | do. | do. | 5½ |
| ,, | Libra | do. | do. | 5½ |
| ,, | Scorpio | do. | do. | 5½ |
| ,, | Sagitarius | do. | do. | 5½ |
| ,, | Mukkur Capricornus | do. | do. | 5 |
| ,, | Aquarius | do. | do. | 4½ |
| ,, | Pisces | do. | do. | 4 |

We come now to a calculation called the Hora, (which corresponds in length of time to the hour of the Europeans;) they allow twelve during the day, and twelve for the night--in all twenty-four. Each hora contains two and a half ghutkas. They apportion the seven planets in rotation to each hora, beginning at dawn or daybreak. The first hora on Sunday or Ruveewar is termed Ruveecha, or that of the Sun; the second Shookur (Venus,) the third Bood (Mercury;) the fourth chundur, (the Moon;) the fifth Shunny, (Saturn); the sixth, Bhrisputty, (Jupiter,) and the seventh

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Mungul, (Mars ;) and this is successively continued, so that before dawn on Monday the Bood hora will be about expiring—consequently at daybreak we have the chundur cha hora, the day being Monday or Somewar, Some and Chundur being the common names for the moon. Therefore, if the day begins with any one of the four before mentioned shoobuh ghrus, or benign planets, the ceremony may be performed without incurring any risk of evil consequences.

Should the time fixed for the wedding ceremony prove auspicious by the previous calculations, still, if the sun or any of the planets have passed on this particular day from one Zodiacal sign to another, then the ceremony must be delayed during the following number of ghutkas,—according to the planet that may have so passed.

| | | | | |
|---|---|---|---|---|
| 1st | The | Sun | 32 | Ghutkas. |
| 2d | ,, | Moon | 2 | do. |
| 3d | ,, | Mars | 9 | do. |
| 4th | ,, | Mercury | 2 | do. |
| 5th | ,, | Jupiter | 84 | do. |
| 6th | ,, | Venus | 6 | do. |
| 7th | ,, | Saturn | 150 | do. |

We have next the year divided into six portions or seasons of two months each : 1. Wussunt, (spring ;) 2. Greeshm, (hot season ;) 3. Wurshu, (the rainy season ;) 4. Shurud, (the autumn ;) 5. Hemunt, (the cold season of dew ;) and 6. Sheesheer, (the cold season.)

Should the time fixed on for celebrating the marriage ceremony take place on the last day of one of these seasons, the ceremony must be postponed for sixty-six ghutkas ; that is, deducting thirty-three ghutkas previous to the transition, and thirty-three after it has taken place. The Hindoo day consists of about sixty ghutkas, at times more or less.

When a conjunction of particular Nukshutturs, (the retiring and advancing,) or of Yeogs, or of Teeths, (lunar days,) happen the same day, then a delay of two ghutkas is directed to be made, one ghutka at the termination, and the other at the commencement of each respectively.

No ceremony takes place for three days previous to an eclipse. When the sun or moon have been eclipsed, the ceremony is to be delayed, as follows, according to the extent of the eclipse.

| One authority says, | Another authority says, |
|---|---|
| ¼ of eclipse for 3 days | 1½ days |

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| | | | | | |
|---|---|---|---|---|---|
| ½ ,, | ,, | ,, 4 | ,, | 2 | ,, |
| ¾ ,, | ,, | ,, 6 | ,, | 3 | ,, |
| Full eclipse | | ,, 8 | ,, | 4 | ,, |

Should any uncommon phenomenon take place, such as an earthquake or lightning, striking a house, &c. the ceremony must be delayed for seven days. And if a meteor has been seen, a delay of seven days is required. Should any persons be killed, or houses burnt by lightning, a delay of seven days must be observed. And if a comet makes its appearance on the fixed day, the ceremony must be put off to some future and more auspicious day.

The Bhudra is a particular astronomical period. It is said that on the 3d and 10th of krishun puksh, or the 2d or dark half of the moon, the Bhudra maintains his power for the latter thirty ghutkas of each day, in consequence of which the first thirty ghutkas are only available as possessing auspicious qualities. The 7th and 14th day of krishun puksh possess the same qualities, only that the latter thirty ghutkas are propitious.

The first thirty ghutkas of the 4th and the 11th of shookul puksh, or the light half of the moon are fortunate; also the last thirty ghutkas of the 8th and poornimah, or full moon, are equally lucky.

The following are termed the Nukshuttur Gundant, (inauspicious conjunctions,) namely, Asslesha, Jesth, and Rewutty. A delay of four ghutkas must take place when fixing the time for consummating the ceremony. In this manner, when one of the asterisms is disappearing, the two last ghutkas, and the two first ghutkas of the advancing asterism, are to be rejected.

Next comes the Teethy Gundant. These are the 5th, the 10th, and 15th, or full moon; a delay of one ghutka at the termination of each of these three lunar days, and one ghutka at the commencement of each suceeding day, is required to be made—in all of two ghutkas.

There is then the Luggun or Zodiacal Gundant. The three signs, Scorpio, Cancer, and Pisces. The ceremony must be postponed for half a ghutka at the retiring of one of these signs, and half a ghutka at the approach of its successor—in all a delay of one ghutka.

After this we have the Chunda Yoodh's. The following yeogs are considered unlucky, the Saddia yeog, Veetypaat, Vyddritty, Hurshun Sheooll, and Gunj yeog. So that when one of these yeogs has terminated with one of the lunar Nukshutturs, and another yeog begins its course with the same lunar Nukshutturs, this Nukshuttur is termed the Chunda Yoodh, and is therefore rejected from their calculation.

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The Ekkargul dosh. This is a calculation partly on the lunar Nukshutturs and the yeogs, by the Sun passing through the path of the Nukshutturs. They assign one of the lunar or daily Nukshutturs to every half month in the year, occasionally a little more or less, so that the Nukshuttur which presides over each fortnight is termed the Mha Nukshuttur. Again they reckon six of the yeogs in the Ekkargull dosh, viz. Vishkoomb, Hutty gund, Sheool gund, Nustuhgund, Veeagund, and Wujjur; these are called the Deoor yeog. To discover if the time is favourable, it is necessary to reckon the number of Nukshutturs forward from the luggun or daily nukshutturs to the Mha Nukshutturs or solar one; and if the intervening number be an even number, and if at the same time one of the six Deoor yeogs prevails, the period will be considered lucky; but on the contrary, should the number between the luggun Nukshuttur and the Mha Nukshuttur prove to be an odd number, and a Deoor yeog prevails, it will be termed the Ekkargull dosh, and evil consequences will be dreaded.

The Waardosh, (evil of the day.) In the waardosh a delay of a certain number of ghutkas takes place, reckoning time from sunrise.

1st, Monday. The first 16 ghutkas are lucky, the succeeding 2 are unlucky, the rest fortunate.

2d, Tuesday. The first 12 ghutkas of night unlucky, and the rest lucky.

3d, Thursday. The first 22 ghutkas lucky, the 2 following unlucky, and the rest fortunate.

4th, Friday. The first 16 ghutkas lucky, 2 unlucky, rest fortunate.

5th, Saturday. The first 2 ghutkas unlucky, all the rest lucky.

The evil consequences resulting from the unlucky ghutkas of Sunday and Wednesday disappear in the calculation of the Yeeamarddosh. The Yeeamarddosh, (the evil of the watch.) The proceedings here are much the same as those of the Waardosh, only that the length of the unpropitious period of each day is of equal duration.

| | | |
|---|---|---|
| Sunday, | the first 12 ghutkas lucky, | the next 4 unlucky. |
| Monday, | 24 lucky | 4 do. |
| Tuesday, | 4 do. | 4 do. |
| Wednesday, | 16 do. | 4 do. |
| Thursday, | 28 do. | 4 do. |
| Friday, | 8 do. | 4 do. |
| Saturday, | 20 do. | 4 do. |

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It is added, that no penance will remove the evil consequences.

After this comes the Koolik, another inauspicious period. On a sunday, the 14th moor'th, during the day time is termed the Koolik, and in consequence a delay of two ghutkas is required to be made, and the 13th moor'th, during the night is rejected; each moor'th is equal to one 15th or about two ghutkas. On a monday, the 12th moor'th, during the day, and the 11th during the night, are rejected. On tuesday the 10th during the day and the 9th moor'th at night. On wednesday the 8th, during the day and 7th at night. On thursday the 6th during the day, and the 5th at night. On friday the 4th during the day and the 3d at night. Saturday the 2d, during the day and the 1st, at night. I may remark here that the calculations of the Kall, the Kuntuk, the Yemgunth, resemble those of the Koolik. The Kall velah is reckoned from thursday. The Kuntuk velah, from wednesday, and the Yemgunth from friday. These three periods do not occur at night, although the Koolik takes place during the day and night.

We have now a calculation which refers to the Zodiacal signs, here termed lugguns, (and before explained.) Should the Moon be in the 1st, the 6th, 8th, or 12th constellation from the luggun fixed on for celebrating the ceremony, it must consequently be postponed, otherwise much evil is dreaded. Venus must next be in the 6th constellation from the named luggun; however, should Venus be in the 4th or 5th from it, the ceremony may be performed, as it will not be considered unlucky. Rahoo being in the 4th constellation from the named luggun it will be unlucky, and if Mars is in the 8th constellation, it will be equally unfortunate; but should the benign planets be so situated as to remove the malign influence, they proceed with the ceremony: however, to accomplish this, they must be placed as follows.

If Venus happens to be in the 6th sign, namely in Virgo, no danger is to be apprehended, for the sign Virgo is looked upon as being inferior or below Venus; even should Venus be in Leo, Cancer, or Sagitarius, although they are at enmity with Venus, no danger is to be apprehended. Yet, under other circumstances the latter coincidence would be considered unpropitious. Should Mars be in either of the constellations, Virgo or Gemini, while they are the 8th from the named luggun, (although these two bear enmity to Mars,) no evil is to be dreaded, neither is it of any consequence, should Mars be in Cancer, if it is at the time the 8th distant from the named luggun—for Cancer is below Mars—and should Mars

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be in a state of immersion, it will be of no consequence. If the moon during the shookull puksh (or light half) be in the 6th or 12th constellation from the named luggun, no bad consequence will result, provided any one of the divisions of the Shoobah gruhs or propitious planets is viewing the moon, and it be all potent. To whatever Zodiacal sign the moon is propitious, should Jupiter or Mercury be in that constellation at the time, it will prove singularly fortunate. But should it be otherwise, and an evil planet be in the constellation, matters will turn out unluckily.

The Kranty. This is in allusion to the declination or distance from the equator, and supposed to affect the constellations in the following order respectively. Aries and Leo, Libra and Aquarius, Taurus and Mukkur, Cancer and Scorpio, Virgo and Pisces, Sagitarius and Gemini. Whatever day the sun is in one of these constellations, and the moon in the corresponding one, as they are here classed, it will be reckoned unfortunate.

The Kendruh. The Moon, Mercury, Venus, and Jupiter, are said to be in the Kendruh or Kuntuk (favourable position) when they are either in the 1st, 4th, 7th, or 10th constellation distinct from the named luggun. When these four planets are in the 5th and 9th constellations, it is termed the "Kone," and the period reckoned lucky.

Now we have the Kurtury. If on the day fixed for the ceremony the moon or the named luggun, has an evil or unpropitious planet placed on either side of her, that is either in the 2d or 12th constellation, it will prove unfortunate, or the Kurtury dosh will exist. But again, certain configurations will tend to remove the evil consequences. For instance, if Jupiter be the 12th constellation from the named luggun, and the benign planets Venus and Mercury are in the luggun fixed on for the ceremony, and the Moon in the 2d distant from it, no harm is to be apprehended. Should one of them only be in the named luggun, it will be termed the Samun Kurtury, and no evil will be dreaded.

Then comes the Wurkury. If the moon is in the 2d sign from the named luggun, and an unpropitius planet is also there, and it retires or retrogades, as Mars from Pisces to Aries, and an evil planet in the 12th constellation is advancing, then great danger is to be apprehended, and it is termed the Muhut Kurtury. It is to be stated, that if a lower evil planet be in the 12th constellation, and a lower planet in the 2d one, then the danger is removed.

A calculation of a singular, (and to them of rather an important)

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nature, of the Zodiacal signs, and Lunar days, follows, termed the Punchuk, (unpropitious.)

They have it that the twelve Zodiacal signs, or lugguns, corresponding with the twelve months of the year, are divided off into an allotment of six signs during the day, and six during the night; and that the sun always sets during the continuance of the seventh sign—for they allow an unequal number of Ghutkas to the duration of each sign, and determine the sign the sun sets in from the one in which he happens to be in any particular month, as he is said to rise in that sign each morning. Then they always count up how far this sign (in which he sets) is from Aries, (mesh)—for Aries is invariably the sign employed in this calculation—and if they find it stands eight, they go on with their calculation, which they do by adding the number of the preceding lunar day (the Teeth) of the month fixed on for the ceremony, to the number obtained by the previous calculation, and this total they divide by 9, and if there should be a remainder of one, they call it the Mieurty Punchuk, or certain death.

If after this division by 9 a balance of two remains, it is termed the Aggny Punchuk, (fire destroying.) If 4 remains, we have the Raj Punchuk. If 6, we have the Chor Punchuk. If 8, we have the Rogh Punchuk.

Now should the Rogh Punchuk prevail during a sunday night, the ceremony cannot take place, but it may be celebrated during the day.

If on a thursday the Chor Punchuk takes place, going out during the night to any distance is to be avoided.

When the Mieurty Punchuk happens, no ceremony takes place during the day or night.

Yet they say that should there be a pressing necessity for consummating the ceremony on the wished for day, that the evil consequences of the Punchuk will be removed by certain stars proving auspicious at the time.

For instance, if the four benign planets be in the named luggun, no evil consequences are to be apprehended. Besides, it is written in the Jattuk Shaster, that if the Swamy or Regent of the particular sign or luggun is visible to the planet Venus, and if both be in the same constellation at the time, no danger is to be apprehended.

If at the fixed time for the ceremony, the moon be in the 2d, 3d, or 4th constellation from the named luggun, matters will be considered fortunate.

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Then follows a calculation connected with the Zodiacal signs and the Regent's or Swamy's, which is termed the Ounshes or degrees. It is desireable to secure six properties to render every thing fortunate—four is absolutely necessary—and if this number cannot be realized, the ceremony must be deferred till a more lucky time. For the entire proceeding is one of great importance with the Brahmuns.

The six divisions are as follows.

1. The Ghru,
2. The Hora,
3. The Dreshkan,
4. The Nuvamaounsh,
5. The Dwadushounsh,
6. The Trewushounsh,

1st, The Ghru. If the regent of the named luggun be a Shoobah ghru or propitious planet, one portion of the alloted six qualifications is obtained.

2d, The Hora is equal to fifteen Ounshes or degrees, consequently two to one luggun: so that of each lugguns two horas, one is assigned to the sun and the other to the moon. The lunar ones are considered propitious while the solar ones are looked upon as being the reverse. To the lugguns called the odd ones, (as 3, 5, 7, &c.) the solar hora is allotted to the first half: so that the last half is the fortunate one, the lunar hora being assigned to it. And to the lugguns of even numbers (as 2, 4, 6, &c.) the lunar hora is assigned to the first half: so that of these numbers the last are unlucky, from the solar hora being allotted to them; if the calculation corresponds, one of the six properties is obtained. The Dreshkan is equal to one third of a luggun (or sign) or ten ounshes, or ten degrees. Should the named luggun (that of the ceremony) come within the limits of the first Dreshkan, and if the regent of the named luggun be a propitious planet, one wurg or qualification is attained. Secondly, should the named luggun come within the second Dreshkan, and the regent or swamy of the fifth luggun distant from the named one be a propitious planet, one property is gained. Thirdly, should the named luggun be within the third Dreshkan, and the regent of the ninth one distant from it be a fortunate planet, one property will be gained.

The Nuwa Maounsh. Should the named luggun be Aries, it will be necessary to reckon 9 forward from Aries, which will bring us to Sagitarius. 2d, If the named luggun should be Taurus, it

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will be requisite to reckon 9 from Mukkur (corresponds with our Capricornus) forward, which brings us to Virgo. 3d, Should it be Gemini, we must reckon 9 forward from Libra, which will bring us to Gemini. 4th, If the named luggun be Cancer, we must reckon 9 forward, and we get to Pisces. 5th, Should it be Leo, we count 9 forward from Aries, and we get Sagitarius. 6th, If it be Virgo, we count 9 from Mukkur, and get Virgo. 7th, If it be Libra, we reckon 9 from Libra, and get Gemini. 8th, If it is in Scorpio, we count 9 from Cancer, and we get to Pisces. 9th, Should it be Sagitarius, we are to reckon 9 from Aries, and we get Sagitarius. 10th, Should it be Mukkur, we are to reckon 9 from Mukkur, and we get to Virgo. 11th, If it be in Aquarius, we must reckon 9 from Libra, and we reach Gemini. 12th, And if the named luggun be in Pisces, we must reckan 9 forward from Cancer. They now ascertain, by a very peculiar calculation, (unnecessary to explain here,) in which 9 is the divisor, if the regent of the 9 luggun or ounsh, or any one of the intermediate ones, be the most fortunate, and determine accordingly. Should it be so, one other qualifications is secured.

Then the Dwadush Ounsh is examined. In this calculation the divisor is 2½. The number arising from dividing 30 ounshes by 12, (the signs,) give 2½ to each luggun. It is necessary to count twelve forward from the named luggun, and having the fixed luggun and time, they ascertain all the unlucky Ghutkas, and reject them, and afterwards proceed to determine if the moment be lucky for the ceremony being performed, in the same peculiar manner as that for the Nuwamaounsh; and if all turns up well, another property is gained.

The Trewushounsh. This is a further examination into the ounshes, or bhaggs, or thirty degrees to one luggun. Should the named luggun be an even number, the first 18 degrees are said to be fortunate, and the remaining 12 are unlucky; and if the named luggun is an odd number, the first 10 degrees are considered unlucky and the last 20 degrees fortunate. By matters being so settled another qualification is secured.

They consult the water clock, or clepsydra, by watching the movement of the cup after they have put it into the water, and to which they pretend to attach very great importance, drawing omens from its moving to the north or south, the east or west; and the quarter in which it settles and sinks, for all these trifles, are most minutely attended to.

The Dreest dosh. It is stated, that each of the planets beholds

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one quarter of the 3d, and one quarter of the 10th constellation distant from whatever sign such planet happens to be in, but that the whole of the 3d and 10th constellations are visible to Saturn from whatever sign he may be in. It is now desirable to ascertain if the regent or swamy (planet) of the named luggun (constellation) is so situated as to behold the luggun on the fixed day: if so, it will be considered fortunate and the bridegroom will be very happy. If the regent of the 7th sign from the named luggun, can behold the 7th sign on the day of the ceremony, the bride will enjoy great happiness. There are several calculations included in this, but not inserted, as it would lengthen the chapter too much.

The Lutta dosh. This is what is termed the repelling evil, and which they anxiously wish to avoid; it is calculated on the benign and malign planets, and the lunar Nukshutturs. For instance, they say that the Sun repels the 14th Nukshuttur in advance from that one near which the Sun happens to be, and that the evil influence remains while the Sun is in that position. On the day of the full Moon, the Moon is said to repel the 7th Nukshuttur from the Nukshuttur of that particular day. Mars is said to repel the 3d Nukshuttur from the one he is near. And Mercury repels the 22d Nukshuttur. Jupiter repels the sixth, Venus repels the 24th, and Saturn repels the 8th Nukshuttur in advance from the one he is near, and the Rahoo and Ketoo repels the 20th Nukshuttur, counting backwards from the one near which they are.

The Wuddoo dosh, (or evil attending the bride.) During one year from the period of the consummation of the marriage ceremony, calamities, it is said, will befall particular persons related to her, under particular circumstances, and it is therefore necessary to avoid them. For instance, if the bride resides in the house of her father-in-law during the month of Jesth, and if she happens to see her husband's eldest (jet) brother any day of this month, it is stated he will suddenly die; and if she remains there during the month of Ashar, and she sees her mother-in-law, the old lady will experience a similar fate; and if during her stay there the Dhoondy or additional month occurs, her husband will expire immediately. Again, if she continues there during the month of Poosh, her father-in-law will forfeit his life; and should she continue to reside there during the month of Chytur, her own father will die; and if she should be residing in her father-in-law's house during a diminished month, when a decrease of the digits of the Moon takes place, she herself will expire.

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When celebrating the Paat, mhottur, or second marriage, they consult the Paat Chukkur: no months or particular days are attended to, except the Peettur Paat. They calculate how far distant the lunar Nukshuttur is from the solar one. Then they say the four first are unlucky, but that the two succeeding ones (the 5th and 6th) are fortunate, provided they are luggun Nukshutturs, or propitious, and therefore available for celebrating the nuptial ceremony. After these six (7th, 8th, &c.) Nukshutturs are unlucky, but the three succeeding ones lucky, if they prove luggun Nukshutturs: then follow three unlucky and three of a medium property; afterwards three fortunate, and again we have three unfortunate. This is all that is attended in the Paat ceremony.

It is necessary that I should here remark, that many of these calculations (termed by them Ghutkas) are at times neglected in arranging the ceremonies of the lower classes, and that they are chiefly attended to only by the higher castes, and by persons of wealth, and those who are anxious to celebrate the nuptial ceremony during the day time; for, latterly, it has become the general custom to perform the ceremony exactly at sunset among the Shoondurs, the mixed classes, and poor Brahmuns, when pressed for time, and consequently termed the Godool Luggun, from the cattle returning to their homes at that hour, and much dust arising from their approaching the village gateway all about the same time.

In conforming to the rites of the Godool Luggun, it is requisite to avoid five doshes or evils, namely, the Koolik, the Kranty Samun; and when the Moon is either in the first, the sixth, or eighth (daily signs) lugguns at the time the Sun is setting, the marriage ceremony is not to be solemnized: nor if Mars is in the eighth luggun.

The Jossies say, that if the Shasters (meaning the entire regulated ceremonies) were attended to, as they should be on all occasions, poverty and distress would not be so prevalent among the poor Brahmuns. The truth of the observation cannot be denied.

There is nothing singular or scarcely worthy of being recorded respecting the funeral rites, or the ceremonies at the birth or naming the children of the Ramoossies, which differs from the other lower tribes of the Hindoos. They bury their dead, placing the body in the grave at full length, and sometimes in a sitting posture, the head to the south, and feet to the north, the face rather inclined to the east.

When a woman is confined to her bed from the pains of travail, her husband places an arrow at each corner of the bed, and one near

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her head; however, as they have seldom such a thing as any arrows by them, they substitute pieces of jowary straw about a cubit in length, with a large cockspur thorn stuck into the end of each. On the fifth day, when the mother and infant bathe, certain ceremonies are performed to propitiate the goddess Sutwaie(a derivative of Devy)* and who presides over obstetric duties. On this occasion the arrow deposited at the head of the bed, is transferred to the bath for the time. The arrows are removed on the twelfth day, when the mother in general returns to discharge her household duties.

In the course of a day or two, or at all events, within a fortnight from the birth of the child, the father waits on the Jossy or village astrologer, to ascertain what name he is to give to his child. The Jossy having learnt whether the child is a male or female—if a boy, after a little time, he says that he is to be called Ramjee, and if a girl, her name is to be Bheemy. Should the father be a person in very poor circumstances, he will give a pyse† or two to the Jossy, and probably a seer of grain. Before the Jossy determines the name, it is necessary that he should not only know the day, but the particular watch during the day or night in which the infant was born, to enable him to establish in what churun or quarter of the Nukshuttur it happened. This having been accomplished, he refers to the Aukkur Chukkur, which all the Astrologers can repeat by rote, and finding that the boy was born during the third churun or division of the Nukshuttur cheetra, he is to be named Ramjee, and if a girl her name is to be Bheemy, as she was born during the fourth churun of the Nukshuttur mooll. The 28 Nukshutturs,—each of them preceded by four monosyllables, constitute the Aukkur Chukkur. In this manner, Choo, Che, Cho, Laa, Asswiny, as each Nukshuttur occupies about six ghutkas‡ of time, each churun or quarter has about fifteen ghutkas, (nearly six hours) one of these monosyllables is allotted to each churun, so that if the child was born during the fourth churun and was a boy, he would be called Laaroo. The particular monosyllable becomes the first syllable of the name to be fixed on. However in the Dekhan this name is scarcely ever used except du-

* The Juno Pronubo of the Romans.

† When it is wished to have a record of the horoscope and name;—also the future fortune of the child told, it is necessary to reward the Brahmun for his trouble, and a rupee or two is presented to him, sometimes five and ten rupees; wealthy persons bestow larger sums. The astrologer that calculated the horoscope of the Peshwah Mhadeo Row, who was born on the Purundur hill, received thirty begahs of land in enam.

‡ The period of each Nukshuttur varies from 54 to 65 ghutkas.

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ring the marriage ceremony. On the twelfth day, when they place the infant for the first time (if a girl) in the cradle, or if a boy on the thirteenth day, the mother gives the infant the name of some god or goddess, or that of some of their ancestors. This is the name by which the child is known by through life. Unless they subsequently call the boy by one of the familiar and common, but at the same time respectful appellations of Baba, Nana, Dada, Tatiah, Appa, Kaka, Bhow, Naik, or Row Sahib. The Mharatta and Konkany Brahmuns never mention their Jumnum puttur name in public. They repeat it daily in private when worshipping their household gods.

It is known to such persons as have intercourse with the natives, that a Hindoo is not in the habit of mentioning his wife's name in conversation, or when speaking to her, and that the wife is equally, if not more, scrupulous than the husband, in this respect. Any thing to the contrary is reckoned highly indecorous.

It would be almost endless, and at the same time useless, labour to attempt to explain all the supposed consequences arising from the calculations connected with their system of judicial astrology. I shall finish by subjoining a copy of the Aukkur chukkur before alluded to, and adding a few remarks regarding some of the Nukshutturs.

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## THE AUKKUR CHUKKUR.

| | | | | |
|---|---|---|---|---|
| Choo | Che | Cho | Laa | Asswiny |
| Lee | Loo | Le | Llo | Bhurny |
| Au | Eh | Oo | Ay | Kritteka |
| Oh | Waa | Wee | Woo | Roheny |
| Be | Bo | Ka | Kee | Mirgh |
| Koo | Ghu | Ghnu | Chu | Arruddhra |
| Ke | Ko | Ha | Hea | Poonurwussoo |
| Hoo | Hey | Ho | Daw | Poosha |
| Dee | Doo | De | Do | Asslesha |
| Maw | Mee | Moo | Mey | Muggah |
| Mo | Taw | Tee | Too | Poorwah |
| Te | To | Paw | Pee | Ootraw |
| Poo | Sha | Nna | Thaw | Hust |
| Pey | Po | Raw | Ree | Chetra |
| Roo | Rey | Roo | Taw | Swaaty |
| *Tee* | *Two* | *Tey* | *Toh* | Veeshak |
| Na | Nee | Noo | Neh | Aunooradah |

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| | | | | |
|---|---|---|---|---|
| No | Yeea | Ee | Yoo | Jestha |
| Yeh | Yo | Bhaw | Bhee | Mooll |
| Boo | Dhaw | Phaa | Dwhaw | Poorwashara |
| Bhe | Bho | Jaw | Jee | Ootrashara |
| Joo | Jeh | Jo | Kha | Abbyjeet |
| Khee | Khoo | Kheh | Kho | Shrawun |
| Gaw | Gee | Goo | Geh | Dhunnesta |
| Go | Saw | See | Soo | Shuttootarike |
| Seh | So | Ddaw | Ddee | Poorwa Bhadurpuda |
| Ddoo | Dneah | Jhaw | Fhaw | Ootra Bhadurpuda |
| Ddeh | Ddo | Cha | Chee | Revetee |

The 28 Nukshutturs are divided off into equal portions to each Zodiacal sign; so that when the Nukshuttur is known they refer to the rass or constellation, and by discovering the day, the month, and year are determined from the Junnum puttur.

The Nukshutturs Mool, Asslesha, Jestha, Veeshak, and the first churun or division of Muggah, are considered peculiarly inauspicious to be born under. It is written, that if a boy is born during the first churun of the mooll, the father will die in consequence, unless the required propitiatory offerings and sacrifices are made.

The evil effects of this birth, it is said, continue for seven years. The consequences attending the birth of a girl are similarly fatal, but the evil influence does not extend in her case longer than three years. If a child is born during the second churun of the mooll calamities of a similar nature wait the mother, and when a child is born in the third churun, all description of property belonging to its parents, will be destroyed, and if in the fourth churun the child will not be longlived. So that burnt offerings and oblations are wanted to satisfy the priests. It is however to be remarked, that during the months Magh, Ashar, Asswin, and Bhadurpuda, the Mooll is considered innocuous.

A child born during the fourth churun of the Asslesha, will entail the most fatal consequences on its father, and if in the third churun it will prove fatal to the mother-in-law. However, the evil influence is to be removed by timely donations.

The Jestha is wholly unlucky; the first and second churuns to the brothers-in-law. Offerings and charity will remove the evil consequences. One of the many ways of trying to remove the evil influence supposed to arise on these occasions, by wealthy persons, is thus; they put the new born babe into a soop, (a basket,) and having selected a good milk cow with a calf, the infant is placed before

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the cow, in order that she may lick it, by which operation the noxious qualities which the child has derived from its birth are removed. The cow and calf are afterwards presented to the priest, who prays that every blessing may be poured down on the head of the donor, that he may long enjoy his health, and possess the power and will of bestowing alms on the needy.

The Nukshutturs, Cheetra, Bhurny, Poonurwussoo, Poosh, Asswiny, Rewuty, and Kritika, are reckoned rather inauspicious, and will entail misery on the infant that happens to be born while they are dominant, or on its parents or relations; but charitable acts will remove the evil.

The Yeogs Veetypaat and Vydritty. The Kalleany Bhudra, Sunkrant, and the Amwass, are considered unlucky to be born under: the gow prussawa or the ceremony of placing the child before a cow is performed for good luck.

It is to be remarked, that we frequently find a considerable discrepancy exists between the writers on the subject of judicial astrology.

*(To be continued.)*

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## *II.—Illustrations of the Botany and other branches of the Natural History of the Himalayan Mountains and of the Flora of Cashmere. By John F. Royle, F. L. S. and G. S. M. R. A. S. &c.*

The recent appearance of three large works on Indian Botany* and the anticipation of a fourth which may be soon expected, induce us thus early in our career to devote a few pages to an article on that subject.

We do this, not only from a desire to gratify public taste so strongly indicated by that event, but from a wish, on our own part, to aid, to the utmost of our power, the diffusion of a science, so worthy of our attention, and in that way assist in removing, the not altogether unmerited reflection cast upon us, that with all India

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* Roxburghs Flora Indica 3 Vols. 8vo.—This work was nearly 20 years in MSS. before publication. It is notwithstanding a valuable work of which unfortunately a few copies only were printed.

2d. Wallizi's Plantœ Asiat: Rarieores 3 Vols. Folio. with 300 coloured plates. The most splendid contribution to Botanical science that has appeared in the course of the present century.

3d. Royle's Illustrations which we are about to notice.

4th. Wight and Arnott's Prodromus Floræ Peninsulæ Indiæ Orientalis. Advertised as nearly ready for publication.

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under our sway, we know little of its natural history beyond what enterprising foreigners have taught us.

We have long considered Botany a pursuit, which would amply repay the trouble of mastering its difficulties, by the gratification it would afterwards afford; but it will do more in an unexplored country like this, where there is a wide field and few labourers, it will reward the diligent by adding celebrity to their names, by the important discoveries they are likely to make, both to mankind and to science. From motives such as these, we hope many, now that they have the means, will be induced to study it, but putting interest out of the question we would recommend "Botany for its own sake, since, as a mental exercise or study for raising curiosity, gratifying a taste for beauty of contrivance, and sharpening the powers of discrimination, nothing can exceed it" To this well merited panegyric we may add, that no branch of natural history has been so much cultivated, or had the talents of so many eminent men devoted to its extension and improvement. Nor is this to be wondered at, when we bear in mind that to the vegetable kingdom, man, even in his rudest state, is largely indebted for his food, clothing, shelter, and medicine: how much more in a high state of civilization, can only be estimated by those who are acquainted with the thousands of necessaries, conveniencies, and luxuries of life, we derive from plants.

The better to enable our readers to follow us in our after remarks, we shall devote the first part of this article, to a concise view of the objects of the science, and then proceed with our review.

Botany may be divided into two principal branches, economical, and systematical or practical Botany. To the first belong agricultural and medical botany; both taken in the widest sense of the terms: to the second, the anatomy, physiology, classification, description, and geographical distribution of plants. The first treats of the cultivation of those plants from which products useful to man are procured. The second teaches; 1st, The structure or oganization of plants; 2d, The functions which the different organs perform, either in supporting life or in elaborating those principles which render them useful or otherwise to mankind; 3d, The rules by which they have been methodically arranged and distinguished from each other; and 4th, The laws which regulate their distribution over the surface of the globe.

From this enumeration of the objects of the two branches, it must be evident, that though the first is the most cultivated and most

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important to mankind, yet, that it is far from being independent of the second, since considerable knowledge of vegetable physiology is required to enable the cultivator to turn it to the best account; in other words, it is necessary to combine both science and art, since it is well known, that the same plants differently cultivated often possess different properties, a fact which physiology alone enables us to explain.

To the medical botanist an intimate knowledge of systematic botany is indispensible, as it is certain, that plants agreeing in external form, and having a similar structure of seed,or in other words, plants belonging to the same *Natural Order* possess similar properties. This fact now well ascertained, proves that this hitherto, except by botanists, much despised and little understood part of botany, is in truth a most important branch of the science, since it often enables us at a glance to determine, whether we may safely use plants otherwise unknown to us, or whether we ought to reject them, on account of their belonging to orders having none, or many poisonous species; as well as assists in so directing our enquiries, as to lead to the discovery of properties that might otherwise have escaped observation.

Systematic Botany by teaching us to discover the name of an unknown plant, enables us at the same time to discover its uses and properties, so far as yet unknown, and to make known such as we ourselves have learned, in such a way as to ensure their not being lost again; and by teaching us to describe a plant correctly, enables us to make known to systematic authors, such new plants as we may ourselves discover. In doing so, we ought to add to the description, notes on their useful properties, and the mode of procuring them, native names written, if possible, in both Roman and native characters should accompany. These however are not to be implicitly relied upon, as a means of again procuring the plant, for it often happens, that a plant has different native names, and still oftener, that the same name is given to different plants. In this country a native name, written in Roman characters only, is generally useless for discovering a plant not otherwise known, as natives can seldom read it, and it is next to impossible to convey to one unacquainted with them, the sounds of one language, by the symbols of another. This is an almost insurmountable obstacle to their use, rarely adverted to by those, who strongly advocate the introduction of vernacular names into Botanical works, under the impression, that they may be useful to future travellers. Influenced by these considerations, we would suggest that the greatest care should be bestowed on the se-

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lection of Roman letters, employed to represent the native sounds, carefully marking those that are sounded long or short &c. and that the same name distinctly written in native characters should, if possible, always accompany. Specimens of the plants in flower and fruit, should also be preserved, as any botanist can with them verify the description, and determine their places in the system of plants.

It appears from what has now been said, that systematic Botany is the key which opens to us the accumulated treasures of the science, and is equally necessary to those who would either add to, or take from its stores. This we trust will satisfy those who ask; " why we bestow so much time and study on naming and classifying plants and not rather study their properties and uses;" that the one is labour in vain without the other, since without the name we can neither learn what our predecessors knew, nor tell our successors what we know.

To the agriculturist, a knowledge of the laws which govern the distribution of vegetables over the earth's surface, is of primary importance, if he would endeavour to extend and vary his productions, by the introduction of new plants, we thence learn, that particular orders and genera, as well as individual species, affect particular latitudes, or proportional elevation above the level of the sea; and if we would cultivate them in countries where they are not indigenous we must bear that in mind, and compensate as far as possible by artificial means, for the change to which we subject them. If we cultivate them for the sake of products they afford in their native country, other circumstances require our attention; for it is not enough that we can rear a plant; to make it perfect its products, we must give it a climate approximating in dryness or humidity as well as in heat or cold. The tea plant for example, has been cultivated to a considerable extent in the eastern Islands, but the tea wants the flavour of the Chinese plant; showing that the climate is not adapted though the shrub grows vigorously. Again, the mangosteen* has been attempted to be cultivated at Madras, but unsuccessfully, perhaps on account of the dryness of the climate. We believe it would succeed at Courtallum, and Malabar where the climate is more moist, where several other plants of the same natural order, and even of the same genus grow, and where several plants common to the eastern Islands grow spontaneously, showing a similarity of climate, which is further proved, by the success with

* The mangosteen mentioned by Ainsley as growing on the Malabar Coast is a different species, perhaps *Garcinia Cowa* Roxburgh.

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which the Nutmeg has been cultivated: Coffee of good quality is also grown there, as well as in Mysore. We also some years ago, saw a very thriving specimen of Cocoa or Chocolate plant in Mr. Hughes', garden; might not that plant be introduced into India with as great a chance of success as the Coffee? we think it might, because our climate assimilates in many points with that of its native country, and produces besides many other plants of the same order particularly one the bastard cedar (*Guazuma tomentosa*) also a native of America.

These few examples will show the benefits to be derived from the study of systematic Botany, as well as from Botanical geography, and with them we shall close this very imperfect sketch of the objects of the science and proceed with our review.

Mr. Royle observes in his prospectus, that in no part of India, rich as it is in the productions of nature, is there greater variety, or forms more interesting, than in the Himalayan mountains. "Their western bases resting on the arid plains of India, abound in all the animal and vegetable forms which are characteristic of tropical countries, while their gradually elevated slope, which supports vegetation at the greatest heights known in the world, affords at intermediate elevations, all the varieties of temperature, adapted to the production of forms which are considered peculiar to different latitudes." These having as yet been only cursorily noticed by naturalists, it is his intention to give a connected, and illustrated view, "of the progressive transitions from the productions which are characteristic of the plains of India, and which exist at the bases of the mountains, to those found at different elevations on their acclivities, where a gradual approach is made to the forms common in Europe, America and Japan" noticing as he goes along, the soil, or rock formation in which they exist, the atmospherical phenomena by which they are surrounded, and the animal forms with which they are associated; and as opportunities offer, directing attention to the useful and ornamental plants of the country, as well as pointing out those which Europe might receive from India, or India from other countries. To accomplish these various ends arrangement is necessary, and the one best suited for the purpose, being, from the facilities it affords of comparison with other countries, the Natural System, is that which will be adopted. Such are the leading objects of the work, and if they are executed in the spirit in which they are conceived, it will undoubtedly prove a model, for all future writers, who wish to present a general view of the Flora of a new country.

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He commences his illustrations by remarking that "The introductory observations having enabled us to appreciate the extent and general nature of the territories comprized within the boundaries of India, and shewn the general uniformity, or rather almost insensible gradation of temperature, on which so greatly depends the natural distribution of animal and vegetable forms, as well as those which are the product of art, we now proceed to the more immediate object of the work; that of illustrating the Flora of the Himalaya mountains." On this passage we have to remark, that a part only of the introduction is printed, which is altogether devoted to geographical details, so that we are for a time at least, deprived of much curious information that belongs to the other subjects of which it treats. On this account, we shall content ourselves with presenting a very abridged description of the principal mountain ranges of the peninsula, adding a few things not mentioned in the original.

India is traversed by four principal ranges or mountains, 1st, the western or Malabar Gauts, 2d, the eastern or Coromandal Gauts, 3d, the Vindyha range occupying central India, and 4th, the Himalayas bounding the whole.

The eastern and western ranges commence between 21° and 22° north, in Candish and Orissa. The first of these, with slight interruptions, forms a nearly continuous series to between 16° and 17°, where there is a considerable break, giving passage to the Godavery and Kistnah rivers. Resuming its course from nearly the same latitude, but further inland, it continues in a south and south westerly direction, till it meets the western range and unites with it in forming the Neelgherries. In addition to the Gauts or principal range, the whole of the Carnatic is studded with detached hills, or intersected with smaller ranges, the most conspicuous of which are the Shevaroy and Namkal hills in the Salem district, rising to the height of about 5000 feet. The western Gauts are more continuous, forming a nearly unbroken range from Candish, to the southern declivity of the Neelgherries, where there is a chasm nearly 16 miles broad. This range is nearer the sea, rises higher, and with a more abrupt ascent than the eastern. Between these, the table land of Mysore is supported at an elevation of between 2000 and 3000 feet, and like the Carnatic is studded with detached hills some of them of considerable elevation. The Neelgherries, apparently formed by the union of these great ranges, rise to nearly double the height of either of them, attaining the elevation of 8700 feet above the sea.

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From the south of the chasm above mentioned, and from the still wider one, between the Shevaroy and Pulney hills, the united ranges seem to recommence and continue uninterruptedly to Cape Comorin, forming an irregular triangle, the base of which, in the latitude of Dindigul, is about 60 miles broad, with some of the mountain peaks between 5000 and 6000 feet in height, and covered with the richest and most varied vegetation.

With this very slight notice of the principal mountain masses of the peninsula, we must for want of room, rest contented, remarking however, that we could not pass them over in silence, owing to the great influence mountains exert over the climate and vegetation of a country: subjects in themselves worthy of being fully discussed, but to which we can only refer incidentally in this article.

The plains of Seharunpore, the station occupied by Mr. Royle, in 30° north, are elevated 1000 feet above the sea. These with the lower external ranges of the Himalayas, which rise from them, though so far beyond the tropic, enjoy during one half of the year a tropical climate and vegetation, (herbacious) during the other half, one nearly European; admitting also of two crops in the year, one tropical, consisting of rice &c. the other European consisting of wheat, oats, &c. Tropical trees, and herbacious tropical perennials that die down to the root in winter, are in bloom during the hot season, when the Thermometer rises to 100°: and during the cool season, when the thermometer falls as low as 37°, European forms apparently incompatable with the flora of the country make their appearance. During this season the cold is so great as occasionally to destroy tropical trees, and the Mango when young requires to be protected. Notwithstanding this great degree of cold, most of the tropical plants enumerated as giving a character to the flora of that part of India, are found scattered through the Carnatic, and many of the European forms are natives of the Neelgherries. Hence we think it probable, that the Floras of Bengal and the Peninsula are nearly the same. It is truly interesting, thus to contemplate a flora, extending through nearly 30° of latitude: a fact we believe unknown in any other part of the world. With respect to longitude, it is more confined, the flora of Malabar as compared with that of Coromandel, producing a greater number of distinct forms than that of Delhi. To the eastward again we believe it is equally distinct, a few plants only being common to both countries. One of the few tropical trees common in the north and not yet met with in the south, is the Saul, (*Shorea robusta*) a

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valuable timber tree which might we doubt not be introduced to any extent into our alpine districts.

For the attainment of greater precision in our ideas respecting the vegetation, as connected with the climate of successive elevations, Mr. Royle divides the southern slope of the Himalayas into three belts; the first supposed to extend to between 4000 and 5000 feet of elevation; as several tropical perennials extend to the latter, and snow rarely falls below the former The second belt may be supposed to embrace the space between 5000 and 9000 feet, as the winter snow is always melted before the accession of the periodical rains in May and June, and is nearly the limit to which herbacious plants of tropical genera extends. The third belt includes all between this and the limit of perpetual snow.

The flora of the first of these belts as already mentioned, is partly European, but principally tropical, and extends over a great part of India: that of the second still retains many tropical forms, but the European ones now preponderate. Of both we possess many representatives in our alpine flora as the following lists extracted from Mr. Royle's work will show. It is necessary to premise, that the bounds assigned to these belts are in a great measure arbitrary, for the changes both in the temperature and the vegetation are so gradual, that it is impossible to draw any clearly defined line, a difficulty which is increased by the productions of similar elevations, changing the farther we penetrate into the Himalayas, owing to the line of perpetual congelation rising higher on the northern than on the southern slopes, or rather on the interior than on the exterior ranges, a fact well ascertained, but not easily accounted for. The vegetation also differs on the same range or even mountain, so that a straight line running along the summit of the ridge, may be seen dividing luxurient arborious vegetation on the northern face, from brown barren grassy covering on the southern.

| Tropical genera common to the Himalayas and Peninsula. | European genera common to the Himalayas and Peninsula. | European and Himalayan genera not yet found in the Peninsula. | Natural Orders having European genera common to the Himalayas and Neelgherries. |
|---|---|---|---|
| Canna | Ulmus * | Pinus | Ranunculaceæ |
| Hedychium | Euonemus* | Taxus | Cruciferæ |
| Commelina | Rhamnus* | Juniperus | Violareæ |
| Tradescantia | Rhus* | Quercus | Caryophylleæ |
| Begonia | Ilix | Acer | Hypericineæ |
| Osbekia | Andromeda | Carpinus | Geraniaceæ |
| Melastoma | Rhododendron | Betula | Umbelliferæ |

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| | | | |
|---|---|---|---|
| Impatiens | Berberis | Corylus | Valerianeæ |
| Ruellia | Daphne | Buxus | Rubiaceæ |
| Justicia | Rosa* | Cornus | (*tribe, Stellatæ*) |
| Indigofera | Rubus* | Cratægus | Dipsaceæ |
| Crotalaria | Lonicera | Prunus | Compositæ |
| Desmodium | Viburnum | Hedera | Gentianeæ |
| Cassia | Gallium | Sambucus | Primulaceæ |
| Acacia | Prunella | Caltha | Pediculares |
| Vitis | Potentilla | Primula | Labiatæ. |
| | | Leontodon | |

These lists might be greatly extended, but we think them already sufficiently long to show the many points of affinity between the Floras of these distant countries. The third belt we must pass over in silence, as it has so few points in common with our alpine region that we cannot expect to derive any advantage from its productions, and therefore refer to the work itself, for much curious and interesting information regarding the climate and productions of it, Cashmere, Kunawar, Nepal &c. But before leaving this part of the subject, we would suggest for the consideration of those who have the means and opportunity, that they could not employ themselves better, or confer a greater benefit on the inhabitants, than by introducing to the Neelgherries, the noble pines and oaks of the Himalayas, as well as their Walnut, Yew, Birch, Maple, Poplar, and Cherry trees, all of which, we think, would thrive well and form an excellent addition to both their useful and ornamental trees.

It is right to mention, however, that there is a difference of climate between the two countries, that might be disadvantageous to such an experiment, in so far as the Neelgherries partake of both monsoons, and are consequently covered with clouds and mists during some part of the season when the Himalayas enjoy bright sunshine, and have the sun while the others are covered with snow. This difference might prove injurious to herbacious plants, but not we believe to trees. We however mention the circumstance, to caution such enterprising individuals as may be induced to make the trial, not to be too sanguine, and to warn them of the necessity of sheltering young plants during the changes of the monsoon, till they have gained strength enough to resist them. With this precaution we are confident, they may depend on having their efforts crowned with success. We would also suggest as worthy of trial, the introduction of some of the oaks from Java, the mountains of which island, produce a great variety, some of great size. Does not the Neelgherries or Malabar mountains produce some species of oak,

* These genera are found both on the plains and mountains of the Peninsula.

since it is found in several places to the eastward? This question we cannot answer, for much as has been said and written concerning these mountains, we have yet much to learn regarding their natural history, which is very imperfectly known. Unfortunately our ignorance is not confined to these mountains, but extends to those of the whole country. The Circar mountains are represented, by all who have had an opportunity of visiting them, as covered with luxurient vegetation to the top, and some of their higher peaks attain an elevation of about 4000 feet. From this range, two or three hundred miles in length, we are acquainted with only a few hundred plants, most of them from specimens only, brought to Dr. Roxburgh by his plant collectors. The Flora of Salem and Baramahl is even less known to us than that. From the Malabar mountains supposed, and we believe rightly, to possess the richest Flora in the world, and forming a range 700 miles in length, we have scarcely 1000 species, and many of these even, are only known to us through the figures of the Hortus Malabaricus published 200 years ago. The Madura and Tinevelly range are, we believe, with the exception of the outskirts, altogether unexplored. Such being our ignorance of the vegetable productions of our mountain ranges, we will not be surprised to learn, at some future period, that we have been advocating the introduction of trees, that are already natives of the country.

We must now proceed to the last subject we intend touching upon;—the application of the Jussieuan method of arrangement to the elucidation of Botanical Geography;—and hope that our readers will favour us with their attention a few minutes longer as the subject is both curious and useful. It has been already mentioned that plants of the same natural order agree in having similar external characters, and internal structure and properties, they also affect similar soils and climates, and can be grafted on each other. Botanists availing themselves of these facts, have recently founded on them, that branch of the science called Geography of Plants: but as this "department embraces the consideration of the constitution of the atmosphere, and the geological structure of all parts of the globe, and the specific effects of particular climate and soil upon vegetation, all points upon which we can scarcely be said to know any thing," it has not yet made great progress. These points, the discussion of which we cannot now enter upon, are all more or less fully treated by Mr Royle, we therefore pass them over, referring to him for information regarding them.

According to Jussieu's method all plants are divided into three

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great classes, acotyledones, monocotyledones, and dicotyledones. The first class or flowerless plants, includes the whole of the Linnean class Cryptogamia; the other two, or flowering plants, embrace the remaining 23 classes of that system. Supposing it were wished to ascertain the relative proportion these classes bear to each other, either with respect to the vegetation of the whole globe, or any given portion of it, we divide the number of flowering by the number of the flowerless plants and the quotient is the proportion required. The proportion a particular family or genus bears to the flora of a country or of the globe can be thus ascertained, and many, other questions answered which we have not room to particularize. Humbolds estimates in this way, that the proportion of the flowerless to flowering plants within the tropics is 1 to 9; in the temperate zone, 1 to 4; and in the frozen, that they are equal. The proportion of Mono-to Di-cotyledones, is estimated at 1 to 5 or 6 within the tropics; 1 to 4 in the temperate; and 1 to 3 in the frozen zone. Of Dicotyledonous orders, Legumenosœ are said to bear to the whole flowering plants the proportion within the tropics, of 1 to 12; in America; 1 to 9 in India; $\frac{1}{6}$; in New Holland; $\frac{1}{8}$; in western Africa. *Temp. Zone.* France $\frac{1}{16}$; Germany; $\frac{1}{20}$; north America $\frac{1}{19}$; Siberia $\frac{1}{14}$; Sweden $\frac{1}{22}$; Sicily $\frac{1}{7}$; *Frozen Zone* $\frac{1}{35}$. Melville island $\frac{1}{33}$. These examples are enough to show the general principle, which can be followed out to any extent. The Flora of a district can thus be compared with that of the whole country, or with another district; that of the plains with the hills; of the sea coast with the inland districts &c. and may ultimately when the relation between soils and plants* are better known, lead to the most important results. Let us now devote a few lines to the analysis of the Indian flora according to this rule. Estimating the known flowering plants of the globe at 70,000, and those of India at 9000, gives for India within a fraction of $\frac{1}{9}$; supposing again that there are 800 Indian species of Leguminosæ, gives the proportion, of $\frac{1}{11}$ for the whole flora; $\frac{1}{87\frac{1}{2}}$ for the globe: supposing again that there are 4000½ Leguminosæ scattered over the globe, those of India are to those of the globe as $\frac{1}{5}$; this kind of analysis is equally applicable to every order and genus.

We are aware, that in taking 9000 as the amount of the Indian flora, we fall far short of Dr. Wallich's calculation, which, we learn from the article Botany of " The description of India"

* On this subject see Mr. Brown's very interesting paper in the Transactions of the Geographical Society; a paper, which we regret we had not seen, when these observations went to press.

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in the Edinburgh Cabinet Library, written by Dr. Greville, he (Dr. Wallich) thinks may amount to about 60,000 species. This we think much too high. We learn from the same article, that Dr. Wight thinks the flora of the Peninsula may amount to 9000, which is also perhaps, rather too high. It is not however to be concealed, that these gentlemen, found their calculations on the known fact, that the country generally has not been explored, and that we know little of it except along the course, of principal roads and rivers, and almost nothing of the alpine flora, which is always the richest. In proof of this assertion, we may mention, that Dr. Wallich collected in Nepal within an area of 60 miles in circumference, 2500 plants in *one year*. Dr. Roxburgh was engaged upwards of 20 years on his flora of India, and it does not contain more. From the Neelgheries with a somewhat larger area, we have as yet only three or four hundred plants, yet it is probable, when as well explored, that the number will be found nearly equal to that of Nepal; on these grounds, we allow they have good reason for estimating the flora far above what is at present known, and heartily wish them success in their endeavours to prove their estimates correct. We were desirous of comparing, the number of Peninsular spicies, with those of the same orders on the Himalayas: unfortunately Mr. Royle has not considered the subject of much importance, and except in two instances has not mentioned the number of species belonging to each order. This we regret, as after remarking the close affinity existing between the Orders and Genera of the two Floras, we wished to see to what extent they corresponded in the numbers of their, species. He for example gives a catalogue of 72 species of Ranunculaceæ, we only know 13 or 14 in the Peninsula, showing how much this is an extra tropical order, but also leading us to infer, that our deficiency, is partly owing to the imperfections of our collections, as we have at least half the number of genera that he has. Of Dilleniaceæ the number is not mentioned, we have 5 or 6. Of Anonaceæ the Himalayan flora is nearly destitute, while the Indian Flora has about 80 species, twenty of which belong to the Peninsula. The Menispermaceæ are few on the higher hills, and differ from those of the plains. On the lower hills and plains, they are the same as ours, but the number not mentioned. Of Berberideæ the Neilgherries have two, out of six species assigned to India. We learn from Mr. R. that the fruit of two of the Himalayan species are dried like raisins in the sun, and sent down to the plains for

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sale. One of them (*B. nepalensis*) is a native of the Neelgheries and might be so used. Of cruciferæ we have only 5 or 6 species, while the Himalayas possess about 70, showing again how much that is an extra tropical order.

We have now we trust, to the extent that our space would allow, proved to the satisfaction of every unprejudiced mind, that Botany, so far from being what we have heard it tauntingly called "a frivolous pursuit," "a profitless science" "a pretty amusement for ladies" is in truth a science founded on philosophical principles, one from which mankind have already derived many advantages, and from which, now that our modes of investigating nature are improving, they will yet derive many more; and consequently that the time spent in its study could not be better employed, so long as it is not allowed to interfere with the performance of those duties, which our respective stations in life necessarily impose.

With respect to the work which has afforded us a text for so long an article, we must say, that if it has not yet realized all the prospectus promises, it bids fair to do so before it is finished. It is true the chapter on the geographical distribution of the Flora of northern India, shows want of arrangement, and is in our opinion tedious and prolix, faults which might have been avoided by subdivision of the subject, and by throwing the numerous lists of plants which are scattered through the text, into a tabular from, which would have enabled the reader at a glance to have compared, those of one district with another, in place of wading through half a page at a time of hard names: and to have saved repetition he might have numbered the different places treated of, and to each plant added the number of each district where it was found. This defect however, scarcely detracts from the value of the work, which contains a vast mass of valuable information, and is, we suppose, to be attributed to the disadvantages under which Indian authors labour, who go home to publish on such subjects, in being from want of time, obliged to print before their manuscript is completed, preventing their revising, and if necessary recasting it before going to press. Bearing this in mind, and making the necessary allowance for it, we think the work highly creditable to the author, and worthy the encouragement of every lover of Natural history. His remarks on the natural orders are both interesting and instructive, and often display much classical research. Of the plates 18 are Botanical, one Zoological, and one Geological, they are in general well executed, and to the Amateur who purchases the work for study, economical,

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as many of them contain several subjects, (34 plants in 18 plates), which is the more deserving of praise, as it must add greatly to the cost, and detracts somewhat from the appearance as works of art, by making them look crowded. We must now take leave of our author wishing him every success in the prosecution of his work.

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## III.—*Geology of the South of India.*

To

*The Editor Madras Journal*
*of Literature and Science.*

Sir,

I am induced to request that you will give the following quotation from Sir J. Herschel's Introduction to the study of Natural Philosophy a place in your Journal, with the addition of some extracts and remarks, in the hope that they may lead to the communication of original information on the hitherto almost unknown geological constitution of the Peninsula. Herschel observes that "Geology in "the magnitude and sublimity of the objects of which it treats, un-"doubtedly ranks, in the scale of the sciences, next to astronomy; "like astronomy, too, its progress depends on the continual accu-"mulation of observations carried on for ages. But unlike astro-"nomy, the observations on which it depends, when the whole ex-"tent of the subject to be explored is taken into consideration, can "hardly yet be said to be more than commenced." * * * "The spi-"rit with which the subject has been prosecuted for many years in "our own country has been rewarded with so rich a harvest of sur-"prising and unexpected discoveries, and has carried the investiga-"tion of our island into such detail, as to have excited a correspond-"ing spirit among our continental neighbours; while the same zeal "which animates our countrymen on their native shore accompanies "them in their sojourns abroad, and has already begun to supply a "fund of information respecting the geology of our Indian possessi-"ons, as well as of every other part where English intellect and re-"search can penetrate." That the South of India may share in carrying on the investigations so happily commenced in Bengal, to which Herschel alludes, it is necessary that something should be generally known of what has been done in the districts to which we have access; these accounts are chiefly to be found in the Bengal Transactions and Journal, neither of which are much read in this

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Presidency. It does not require any great knowledge of geology to collect facts which may be of great use; as I experienced during May last year when, in attending to the nature of the soils and of the rocks from the decomposition of which they were formed, with a view to trace their important influence in the production and on the character of disease, I discovered perhaps the richest collection of fossils which has yet been found in India. This is my encouragement to expect, from the many well qualified persons who have abundant opportunities of examining the many interesting districts under this Presidency, communications which may be of important use to science and have most beneficial effects on more *directly* useful pursuits; I therefore beg you will republish from the Asiatic researches, vol. 18 and Gleanings vol. 1st, the following paper of Dr. Voysey's on the fossils of the Gawilgerh range, which forms the northern boundary of the province which should fall to the lot of the Madras enquirers, and forms an important part of that vast extent of igneous rocks of which the President of the Geological Society in the last anniversary address to that body observed, that they extend over 200,000 square miles, "so that the mind is almost lost in the contemplation "of their grandeur: unfortunately the relative age of these eruptions must remain for the present undetermined, no vestiges of secondary or tertiary formations having been detected within the region described."

## *On some petrified Shells, found in the Gawilgerh range of Hills, in April,* 1823.

By the late H. W. Voysey, Esq.

*Assistant Surgeon His Majesty's 67th Foot.*

"This remarkable range of hills is called, by Arrowsmith, in his last map, the *Bindeh*, or *Bindachull* (*Vindhya* or *Vindhyáchala*) hills. The same name is, however, given to a lofty range of hills on the left bank of the *Godaverí*, as it passes through *Gondwána*, and also to those near *Gualior*. I shall, therefore, distinguish them by the name of the *Gawilgerh* range, particularly as, after repeated enquiries, I have never been able to discover that they were so designated either by the inhabitants of those hills or of the neighbouring plains. They take their rise at the confluence of the *Púrna* and *Taptí* rivers, and running nearly E. and by N. terminate at a short distance beyond the sources of the *Taptí* and *Wurda*. To the southward, they are bounded by the valley of *Berar*, and to the north, by the course

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of the *Taptí*. The length of the range is about one hundred and sixty English miles, and average breadth, from twenty to twenty-five miles."

"On the southward side they rise abruptly from the extensive plain of *Berar*, the average height of which is one thousand feet above the level of the sea, and tower above it to the height of two and three thousand feet. The descent to the bed of the *Taptí* is equally rapid, although the northern is less elevated than the southern side of the range. The outline of the land is generally flat, but much broken by ravines and by groupes of flattened summits, and isolated conoidal frustra. The summits and the flat land are generally remarkably destitute of trees, but thickly covered by long grass. In the ravines and passes of the mountains, the forest is very thick, and, in many places, almost impervious. The inhabitants are principally *Goands*, whose language, manners, and customs differ remarkably from those of the Hindus. At present, their chief occupation is hunting and cultivating small patches of land, which produce a coarse rice and millet. In former years, the cultivation must have been very extensive, since there are the ruins of numerous hill-forts and villages, which derived their chief subsistence from the surrounding lands."

"Many opportunities are afforded of studying the nature of this mountainous range in the numerous ravines, torrents, and precipitous descents, which abound in every part. A Wernerian would not hesitate in pronouncing them to be of the "newest floetz-trap formation," a Huttonian would call them overlying rocks, and a modern Geologist would pronounce, that they owed their origin to submarine volcanoes."

"I shall not give them any other name, than the general one of trap-rocks; but proceed to describe them, and state with diffidence the inferences which, I think, obviously present themselves on an attentive study of their phenomena."

"1st. The principal part of the whole range is formed of compact basalt, very much resembling that of the Giant's Causeway. It is found columnar in many places, and at Gawilgerh, it appears stratified—the summits of several ravines presenting a continued stratum of many thousand yards in length."

"2dly. The basalt frequently and suddenly changes into a wacken, of all degrees of induration, and, I may say, of every variety of composition usually found among trap-rock;"

"3dly. Into a rock which may be named indifferently, nodular-wack-

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en or nodular-basalt, composed of nuclei of basalt, usually of great specific gravity, surrounded by concentric layers of a loose earthy mass, resembling wacken, but without cohesion, which, on a superficial view, conveys to the mind the idea of a fluid mass of earth, having, in its descent from some higher spot, involved in its course all the rounded masses it encountered, and, subsequently, become consolidated by drying. A very slight inspection is sufficient to detect the true cause of this appearance, which is owing to the facilities of decomposition of the outer crust, depending on difference of structure and composition. In none of the conglomerates, or pudding stones, do we observe any traces of this structure, and as it is common to the most crystalline green-stone, porphyritic green-stone, and those rocks usually denominated syenite, there can be little doubt that it is owing to the developement of a peculiar concretionary structure by decomposition. In a small ravine, near the village of *Sálminda*, two thousand feet above the sea, I saw basalt of a perfectly columnar structure, closely connected with a columnar mass formed of concentric lamellæ, enclosing a heavy and hard nucleus. Near this ravine, I had also an opportunity of observing the gradual and perfect passage of the columnar basalt into that which has been called stratified, from the parallelism of its planes; the composition being identical, and, without doubt, cotemporaneous. These changes and passages, from one rock into the other, are so frequent and various, as to render it impossible to refer the most of them to either of the rocks I have abovementioned, as types. I shall, therefore, proceed to describe those which are distinctly marked, and their accompanying minerals. In external appearance, the columnar and semi-columnar basalt closely resembles that of the Giant's Causeway, possessing the same fracture, internal dark colour, and external brown crust. It is equally compact and sonorous. It, however contains, more frequently, crystals of olivine, of basaltic hornblende, and of carbonate of lime. The fusibility of each is the same. Perhaps the basalt of the Gawilgerh range, more nearly resembles, in every respect, that of the *Pouce* mountain in the *Mauritius*. This is, however, of very little importance, since every body who has travelled much in trap countries, knows well what great changes in composition and structure occur even in continuous masses. Among the minerals, calcedony, and the different species of zeolite, are rarely found in the columnar basalt, but they are of frequent occurrence in that which is semi-columnar. The wacken, or indurated clay, is as various in character and composition, as the basalt, and, unfortu-

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nately, I have no type with which to compare it, as in the case of the basalt of the Giant's Causeway. Its colour varies with its constituents, but is most usually gray. It is easily frangible, very frequently friable, and is almost always porous and amygdaloidal. It appears to be composed of earthy felspar and hornblende, with a considerable proportion of oxide of iron. It is always easily fusible into a black scoria, or glass, according to the quantity of zeolite which it contains: of all the trap-rocks, it abounds the most in simple minerals: They are—Quartz."

"Calcedony and calcedonic agates, enclosing crystals of carbonate of lime.
Common and semi-opal.
Heliotrope.
Plasma, or translucent heliotrope.
Stilbite.
Analcime.
Natrolite.
Icthyopthalmite.
Felspar.
Carbonate of lime and green earth."

"I have never been able to discover in it either augite or hornblende in distinct crystals. When the surface of the land is strewed with these minerals, it is a certain indication, that the rock beneath is wacken. With regard to the situation of this rock, I have rarely seen it on the summits of hills, but much more frequently at their bases, and forming the flat, elevated plains. I shall have occasion to advert to this rock again, when I proceed to describe the petrified shells."

"The nodular basalt is, perhaps, the most common form of trap in this mountain range, as well as in other parts of India. It more commonly forms the surface than either of the rocks, and is as frequently seen on the summits, as it is at the bases of the mountains. It rarely abounds in minerals of any kind. It is the principal source of the rich, black diluvian soil of India, commonly called black cotton soil. I have little to add to the former description of it. Its external structure is sometimes beautifully developed by decomposition, since, in a mass of about six inches diameter, it is possible to count above twelve concentric layers, and on striking the nucleus a slight blow with a hammer, one or two more layers are broken off. It is owing to this facility of decomposition, that the annual rains carry down such vast quantities of alluvial soil from its surface,

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which is, moreover, always strewed with an abundance of nuclei in various stages of decomposition. It is owing to the difficulty with which the roots of trees penetrate this rock, that they are so rare on its surface, and never grow to any size; yet this circumstance does not prevent the Andropogon contortum and nardus from growing in the most luxuriant manner, which sufficiently proves the fertility of the soil."

"On ascending from the *Taptí*, I observed in a nullah, a group of basaltic columns, one of which was two feet in diameter, and six sided. When near the summit of the flat table land of *Jillan*, I entered on a pass, formed on one side by a perpendicular section of the rock, from twenty-five to thirty feet, and on the other, by a rapid descent of forty or fifty. The lower part of the section, as well as the pathway, is composed of the wacken, or indurated clay, of the kind I have before mentioned, of about ten feet in thickness; lying on it is a stratum of earthy clay, of different degrees of induration and purity, twenty yards in length, and of about two feet in thickness, containing great numbers of entire and broken shells. This possesses all the characters of a stratum, since the horizontal fissures are parallel, and are prolonged, with a few interruptions, through the whole extent. The accompanying sketch will serve to give a tolerably correct idea of the mode in which the stratum appears to overlie the lower rock, and to have been depressed by that which is superincumbent. The upper rock consists of about fifteen feet in thickness of the nodular basalt, or wacken. The nuclei being of all sizes. The vertical fissures, which are so remarkable in trap rocks, are prolonged from both the upper and lower rocks into the shelly stratum, although there is no intermixture of substance."

"The stratum is composed of a highly indurated clay, fusible before the blowpipe into a fine black glass, and neither it nor the shells it contains, effervesce in acids. The shells are, for the most part, flattened, and belong either to the genus conus or voluta. It is not possible to conceive that so fragile a substance as a thin land shell, should have been so completely flattened without fracture, unless it had been previously softened by some mode, which at the same time produced a sufficient degree of pressure to effect its flattening."

"I have attempted, in the annexed sketch, to give a representation of the degree of flattening; but I fear that it can only be well understood by the specimens themselves. Neither the rock nor its contained shells, effervesce in acids. Westward, the ground is cov-

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ered by the debris of a shelly conglomerate, much more indurated and impregnated with green earth, exhibiting cavities and shells in relief: from the shape of the former, there can be no doubt of their having once contained shells. Some of the shells are entire, but are rarely flattened. The matrix appears to be siliceous, and, in some cases, approaches to imperfect heliotrope. It is not fusible before the blowpipe."

"I may here mention that, in a report to the Marquis of Hastings, in June, 1819, I mentioned the existence of shells in trap rocks at *Medconda*, at a height of two thousand feet above the sea. The hill was composed of nodular-trap, and lying on its surface, were numerous pieces of siliceous stone, containing shells of the genera turbo and cyclostoma—the specific gravity of the stone varied from 2-0 to 2-5 : the shells did not effervesce in acids, although some of them preserved their external polish. Internally, some of the stones appeared to pass into flint, particularly those of small specific gravity, whilst their external surface effervesced in acids. Some of the small shells were completely changed INTO CALCEDONY. Specimens of these shells are lodged with the Asiatic Society."

"It is a remarkable fact, that the only remains of animals hitherto discovered in India, should be found in trap rocks, and under quite peculiar circumstances. 1st. They are found in situations where there are no indications of the former existence of lakes. 2d. Both the shells and matrix are destitute of carbonic acid. 3d. The former are, in many instances, squeezed flat without fracture, and, in some cases, completely commixing with their matrix."

"These effects could only have been produced by the agency of heat, and, consequently, the modern theory of sub-marine or sub-aqueous volcanoes, will best serve to explain the phenomena. These shells were deposited in the stratum of clay in which they are now found, and when forced up by the mass of wacken beneath, they were, most probably, at the same time covered by the nodular basalt. Thus we have heat, to drive off the carbonic acid and soften the shells under a pressure, which assisted the process, and, at the same time, flattened them."

"I have too numerous collateral proofs of the intrusion of the trap rocks in this district, amongst the gneiss, to allow me to doubt of their volcanic origin. I shall take an early opportunity of completing the history of the trap rocks of India, for which I have collected materials for several years past."

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The report to which allusion is made is published in the Journal of the Asiatic Society for June 1833,* and the hills of Medcondah and Shevalingapah being at no great distance from the road from Jaulnah to Hyderabad, the extract, if you can find space for it, may meet the eye of some officer who may be able to visit the spot, and more fully investigate and describe the characters of the hills and of the fossils. Specimens of the shells would be of great value. In the number of the Journal for July 1833 an extract from the Mofussul Ukhbar announced the discovery near Sagar (in the same vast volcanic district) below a bed of trap 17 feet thick, of large reversed univalve shells of the same species, as had been previously discovered silicified in indurated clay at Jubalpoor. These had been described as follows by Dr. Spilsbury in the number for April, 1833.

" The locality of the fossil shells, which I have at length the " pleasure to send to the Society, lies about 18 or 20 miles east " of Jabalpúr. The first three miles cross a sandy plain, which " abruptly terminates at a small rivulet; when the soil changes " to the black alluvial one of the valley. At six miles cross the " Gour river, a rough ghát of *trap:* the road winds on between " trap hills varying from 50 to 300 feet high. I encamped at " *Suleya* on the same river (here 200 feet broad): the bed inter- " sected with veins of heliotrope, quartz, massive and crystallized. " The road then led through an undulating country, with irregular " masses of trap, and for less than a mile beyond, masses of the " accompanying shell breccia, from a single shell to large blocks " of two feet, extend, mixed with the trap, over a space about " 300 feet square. The spot had been under *tillee* cultivation. " There was no *nálá* or ravine near, whence I could judge of the " nature of the substrata, but at no great distance I could see the " trap appearing precisely as in the bed of the river. I asked " the limeburner how he came to discover them? His account

* " On the basaltic hill of *Medkunda* I observed large masses of flint " lying on the surface and deeply connected; also pieces of a siliceous stone " containing shells which had lost their carbonic acid: the external surface " of these masses effervesced in acids. These shells belong to the genera " *turbo* and *cyclostoma*, and living specimens are found in the beds of most " of the rivers as well as on the rocks in their neighbourhood. The speci- " fic gravity of these stones varies from 1.90 to 2.00, that of the flint is " 2.60. A few miles from this place I observed the same shells enclosed " in small pieces of earthy lime-stone; they were lying on the basalt, " which is here 2000 feet above the level of the sea and about 200 above " the river *Manjira:* the base of the hill being granite, and the basalt not " occupying more than 100 feet. *Asiatic Journal for August,* 1833, *page* 401.

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" was, that he is in the habit of taking small quantities of lime " to the neighbouring villages for sale, and in his travels has an " eye to the *geological features* of the country as far as lime- " stone is concerned:—passing this field some nine or ten months " ago he was struck with the very different appearance and " colour of the stones,—and hence the discovery of these fossil " shells."

" The matrix of these shells appears to be indurated clay, and " the forms of the shells are in most cases replaced with silicious " matter; they resemble, as Dr. Spilsbury suggests, the bucci- " num and other shells in the Gawelgerh range of hills described " by Voysey, (Gleanings, vol. I, page 356.)

The Sagar shells discovered by Dr. Spry, " are of one species, " all left-handed, and precisely the same as those discovered " by Dr. Spilsbury, silicified in indurated clay, near Jabalpúr, " and described in the Proceedings of the Society for April, " (p. 205); these however are in their natural state, imbedded " in a loose cellular wacken, the white granular appearance of " which is derived from silex in a white crumbling state, lining " the numerous cells of the matrix as is often observed in the " geodes of zeolite and heliotrope. Both above and below the shell " stratum are beds of wacken, a basaltic clay, becoming harder " below, and more earthy above; the surface being the common " black cotton soil, abounding throughout the trap district. The " same shell deposit will probably be found to extend over a " considerable field."

" On turning to Dr. Voysey's description of the shell stratum " in the Gawilgerh hills, a perfect identity is observable in the " thickness and nature of the superincumbent and subjacent beds " of wacken and basalt: the shells however are described by him " as conus or voluta, but as they were much broken and compress- " ed, they were probably not easily recognized, and may have " been after all identical with the present shells. They bear some " resemblance to the common *ampullaria* of the tanks and jheels " of upper India, described by Mr. Benson, Gleanings 1. p. " 265. The fossil shell however has some specific distinctions, in " its more oval form, and the constant reversion of the whorls. " Should it turn out to be an *ampullaria*, it will be a proof of " fresh water lakes, co-existent with the emission of the upper " Ságar trap, and perhaps with the fossil bone deposit, and as " both by Voysey's testimony and by that of Dr. Spry the shell

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" bed bears all the appearance of a regular stratum—it will serve " as a mark of distinction between the older and more recent volca- " nic emissions of that extensive field." Journal, Asiatic Society, October 1833, page 549.

The apparent absence of fossils in the secondary formations of India, has been remarked by Mr. Conybeare in his report to the British Association, and the want of information on the characters of the fossils discovered by Dr. Voysey beneath the trap of the Gawilgerh hills in Berar, noticed as a subject of regret. A specimen of the Gawilgerh fossiliferous rock which had belonged to Dr. Voysey's collection having been presented to me, I have had a sketch made of the most perfect shell it contains, of the natural size, and although it is imperfect, a comparison with the figure of the Sagar fossils will show, that it cannot be referred to the fresh water family to which ampullaria belongs.*

I have no doubt that Dr. Voysey justly considered the Gawilgerh shells to have been marine, and that like the various species I discovered in the Neermul hills, they had been raised from the bottom of the ocean by a series of great volcanic convulsions, which had also raised the granite rocks on which these trap mountains rest. It will be observed that some remains of small spiral shells exist in the Gawilgerh specimen, and appear to be the same as some of those found on the summits of the Neermul hills, which belong to the Shesha range *running parallel to the former* for several hundred miles; and in a fragment of indurated clay brought by Dr. Voysey from a place called Jirpah, fragments of bivalves can be traced, which are themselves too imperfect to be of use, but their forms can be determined by comparing them with the more perfect ones in my possession.

The singular phenomena exhibited by the eruption of the trap through the granite, and the argillaceous limestone which appears to be interstratified with the great sandstone formation; the consequent alterations in the characters of the rocks, which exhibit all the series of changes from simple elevation to the aggregation of the sand and mud which had covered them (and in which

* Similar fossils found in the trap formation at Chicknee, 62 miles South of Nagpore, appear to me rather to belong to the genus voluta of the Linnean system than to ampullaria. The shell No. 3, in the sketch is a species of voluta which occurs on this coast and is copied from Wood's Catalogue, plate 21, No. 184, and the similarity in form to the Sagar shell, is sufficient to suggest the necessity of caution in determining the characters of imperfect remains on which important inferences depend. The recent shell is 2¼ inches long.

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many of the shells have been entombed where they had lived), and the eruption of fluid lava and scoriæ; and the connection of the hot springs of Mour, Kair, and others to the S. E., with the volcanic chain in which the great extinct crater of Lunar occurs, can now only be alluded to. But the wide extent over which fossils have already been discovered in different parts of the great volcanic district, cannot fail to throw much light on its relative age, and on the geology of the whole tract from the Ganges to the Kistnah, and even on the countries south of that river, especially the diamond districts.

I shall take an early opportunity of presenting a series of specimens to the Society, which will demonstrate the existence of an inland sea or great inlet, which at one time has flowed over the fertile valley of Berar. Great beds of marine shells, some of them so perfect as to differ little in appearence from an oyster bed on a modern coast, are now found in the recesses of the forests which cover the Neermul hills; in others we are almost led to expect to be able to open the bivalves, the hinge though composed of flint, appearing to the eye, of the same elastic structure as the recent shells on the beach. The impression left on the mind by the examination of these singular relicts concealed by the long grass which cover those solitary wilds, whenever the forest is sufficiently thin to admit of its growth, was very strong and cannot be conceived by the mere examination of imperfect hand specimens. The pursuit was not without some danger, as tigers are unusually numerous and night came on while engaged in it. The stone-cutters I had brought with me, could not be induced to remain alone or to explore any new thicket without my presence, and no small alarm was excited by the sudden rush of a large elk through the long grass which concealed him from the people. That the sea was not at the period in question flowing over the Peninsula, and that the marine animals had existed on the coasts of an inlet is apparent, from the occurrence of a fossil palm and of branches of dicotyledonous trees at Hingangaut (a large town near which Colonel Lambton is buried), and of a mixture of large marine shells and wood, in the same rock, in other places, while in one instance, some fine remains of a species of cyclostoma, not very different from that still abundant in the fresh water streams and ponds of the neighbourhood, is found near a bed of large marine shells. Nor will it appear improbable, that such an inlet from the bay of Cambay could have reached the high country near which the Taptee and Nurbudah now rise, when

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it is seen that great ranges of volcanic rock has been forced through the more ancient strata lying to the N. and S. and that the similarity of their geological composition is proved by numerous observations at very distant points. The Neelgherries may have been 7000 or 8000 feet above the sea, and have possessed a vegetation partaking of the European character, when Berar was under the sea. The granite underneath, however, was raised at the same time, as it often rises above the plains and in one place supports a bed of marine shells, 12 feet thick, amongst which some masses of friable volcanic sand is found, and within a few hundred yards a great eruption of trap has taken place, rising precipitously from the granite, and covering it with calcedonies &c. which have been washed down its very steep sides. North of Nagpore, near the cantonment of Kamptee, the granite is also seen to have elevated the sandstone and to have been forced amongst it, bending its strata or converting them into a quartz rock, and within a mile of this, are some small hills of upraised gneiss strata, and a small conical hill of vitrified and strangely altered rock, (from which I broke pieces of carnelian), which has burst through a limestone bed, which it appears to have converted into a fine crystallized mass like the mountain limestones of Scotland. From the summit of this little mound is seen a few miles to the south, the flat topped basaltic hills of Seetabuldee resting on granitic rock and others containing very perfect columns, and 12 miles to the north, the rounded granite or mica slate hills of Ramteak.

The facts discovered in these examinations, leave no doubt of the volcanic eruptions to which the Berar valley owes its rich black soil and extraordinary fertility being posterior to the deposition of the argillaceous limestones and sandstone, which are in every respect similar to the formations in the districts of Cuddapah in which the diamond is found. The sandstone has been raised by these convulsions at Won, 7 miles south of the Wurdah river, where a fine fossil vegetable was found, which, when identified, will be of great interest, no remains having yet been discovered in this formation which occupies so important a place in the geology of India. It is thus described by Mr. Conybeare in his report to the British Association.

" Next to the coal we have to notice a great sandstone formation,
" which is usually considered equivalent to our new red-sandstone;
" this includes many variations of character, comprising, besides sand-
" stone and conglomerates, shales often approximating to older slate;
" the diamond mines of Panna (in Bundelkhand) and of the Golconda

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" district are situated in this formation, the matrix being a conglo- " merate bed with quartoze pebbles: rock salt and gypsum are " found where this formation extends on the N. W. into the great " basin of the Indus: the stratification is uniformly horizontal: *no* " *organic remains occur.* Beginning at the Ganges on the east, " this formation first shows itself, supporting basalt, on the Rajma- " hal hills; it again prevails throughout the interval between the con- " fluences of the river Son (Soane) and of the Jamna with the Gan- " ges, and thence stretches across W. S. W. through the Bundel- " khand district to the banks of the Nermada(Nerbudda),which flows " into the gulf of Cambay,as far as 79° Longitude E.; where it is over- " laid by the eastern extrimity of the great basaltic district of north " western India near Sagar: the red sandstone shews itself again " emerging from beneath the north western edge of this basaltic " district, at Nimach,near the western sources of the Chambal (the " great southern branch of the Jamna) and at Baug, in the valley of " the Nermada." Journal, Asiatic Society, November 1833, page 606.

The occurrence of a black bituminous looking stone amongst the diamond breecia,attracted my attention some years ago, and having found traces of coal between the Baingunga and Wurdah, the apparent conversion of the fossil into a black coal-like substance appeared to support some important speculations. The drawing enclosed exhibits this fossil in its position in the rock, and also a section, of the natural size, made by breaking it across the line of the fibres, and a magnified representation to display its structure more clearly. The drawing, executed by Dr. Wight's botanical draughtsman, is scrupulously accurate, but I fear too minute in the details to be lithographed with success at Madras. An attentive search amongst the sand stones of the Ceded Districts, would probably lead to the discovery of other fossils in this formation. My object being merely to break the ice which seems to have prevented the communication of facts relative to the natural history of the south of India, I shall conclude by observing that the existence of fossils at Chicknee was observed by Mr. Geddes, Surgeon of the Madras European Regiment, early in 1829, that in May 1833 I found them at various places between Neermul (near the north bank of the Godavery) and Hingangaut, 47 miles south of Nagpoor, a tract extending for 180 miles; and that Mr. Geddes in travelling from Nagpoor to Masulipatam by Chandah, found the road from Yoitoor or Ettoor to Poonamalla, on the south bank of the Godavery below the junction of the Wurdah, strewed with petrified wood. The Sechachull

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or Sehsa hills seem to be lost in the eastern gauts near this, but no hills or rocks were observed in the immediate neighbourhood. Mr. Geddes unfortunately was travelling mostly at night, and has not stated if the wood was petrified by lime or silex. When in this direction in 1828 I was informed that hot springs existed in the neighbourhood. I am also informed that a rich mine of fossil bivalve shells has been lately discovered in the Salem hills. Such facts certainly should not be concealed, at a time when India is looked to for facts to confirm or refute the principal speculations on which geologists are divided, and when Russia is enjoying the honor of having successfully explored the regions of Asia lately added to her dominions, and has at the same time been rewarded by the discovery of some of the richest mines of the precious metals in the world.*

J. G. Malcolmson,
*Assistant Surgeon.*

*Reference to the Drawing.*

No. 1, Gawilgerh shells. No. 2, Sagar fossil.
No. 3, a recent species of Voluta. No. 4, Section of No. 6.
No. 5, Section magnified, No. 6, Fossil from Won-sandstone.

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## IV.—*An Historical account of the Christians on the Malabar Coast, by the Venerable Archdeacon Robinson,* A. M.

### Part 4th.

*(Continued from the 269th page of our 4th Number.)*

The diocesan synod of the churches of St. Thomas, summoned by proclamation of the Archbishop of Goa, assembled at the church of Diamper on the 20th of June 1599. We have an exact and authentic account of the acts of the synod, written immediately

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* "That the system of M. Elie de Beaumont is directly opposed to a fundamental principle, vindicated by Mr. Lyell, cannot admit of doubt. And I have decided to the best of my judgment, in favour of the former author." "* * * Mr. Boué and other able writers have opposed the views of this eminent geologist; they deny him the merit of being the first to point out, that different formations and masses of land have been elevated at distant and separate periods, and reject that part of his system which asserts the synchronous elevation of distant mountain chains parallel to each other. Before we are warranted in arriving at general conclusions on this latter point, numerous facts must be collected, and we can but urge all our working brethren to try the adequacy of M. de Beaumont's ingenious theory, by an appeal to nature; M. de Humboldt believes, that the four great chains of Asiatic mountains are parallel to one another, and that circumstance tends powerfully to confirm the theory. As however, the personal observations of this traveller have not extended beyond the Altai, we must still look for evidence whereon the synchronism of the elevations of these mountains may rest to our Indian geologists, whose exertions will naturally be stimulated to attempt the solution of the problem. Russia has been before hand with us in exploring their newly acquired portion of Asia." Professor Sedgwick's anniversary address to the Geological Society, Journal of the Asiatic Society, November, 1833.

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after its celebration, by order of the synod itself, and printed at the end of the History of the Archbishop's visitation by *Antonio de Gouvea*, an Augustinian monk, and Professor of Divinity at Goa. The value of this document is very great to the protestant churches of the west, not only as recording the tyrannical violence with which the Romanists endeavoured to impose their yoke on a foreign church, the diocese of another Patriarchate, but chiefly as bearing ample testimony to the great number of points of doctrine and discipline, in which they differ equally with ourselves from the corruptions of Rome. We are accused of innovation and modern heresy; but here, according to the written testimony of our adversaries themselves, is a church wonderfully preserved by the merciful providence of the Divine Saviour in the midst of a heathen land from the earliest and purest ages—in all probability from the days of the Apostles, without any communication or intercourse with the churches of Europe; and yet agreeing in very many of the most essential points in which the protestants of Europe have resisted the corruptions of the Romanists. Those points, as collected from Gouvea's history are briefly these. "They are said, 1. Not to adore Images; "2. To hold but three Sacraments, baptism, the eucharist, and "orders; 3. To make no use of oils. 4. To have had no knowledge of confirmation or extreme unction. 5. To abhor auricular confession. 6. To hold many enormous errors about the "eucharist, insomuch that the author of the history saith, he is "inclined to believe, that the hereticks of our times, (meaning "Protestants) the revivers of all forgotten errors, and ignorances, "might have had their doctrine about the eucharist from them. "7. To ordain such as have been married several times, and those "who had married widows, and to approve of her priests marrying "as often as they have a mind. 8. That she abhors the Pope and "the church of Rome as Anti-christian, in pretending to a superiority and jurisdiction over all other churches."*

The Synod was opened by the Archbishop, declaring the objects for which it was convened to be the extirpation of heresy and error, the reduction of the churches of St. Thomas to the obedience of the See of Rome, and the general reformation of abuses both among the clergy and the people. The first day of the session was chiefly occupied with the celebration of High Mass, which was performed with great solemnity, and the enaction of certain regulations for the conduct of the Synod in its future deliberations.

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* Geddes.

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On the second day, the Archbishop, after declaring that the Synod should in all things be governed by the holy canons and general councils, and especially *the council of Trent*, kneeled down before the altar, in his pontifical robes but without his mitre, and made the following confession of faith, in his own name, as Metropolitan. The same declaration and oath was afterwards exacted from the Syrian Archdeacon and all the clergy both present and absent.

After reciting the Nicene Creed, he thus proceeded—" I do firmly receive and embrace all Apostolical and ecclesiastical traditions, and all the observances and constitutions of the said church ; I admit the Holy Scriptures in that sense wherein it has ever been, and is still held by Mother Church, to whom it belongeth to judge of the true sense and interpretation of the Holy Scriptures ; neither will I either receive or interpret it but according to the unanimous consent of the Fathers."

I do confess likewise, that there are seven true and proper Sacraments of the New Testament, instituted by Christ our Lord, which are all necessary to the health of mankind, though not to every particular person ; they are, baptism, confirmation, the eucharist, order, penance, matrimony, and extreme unction, which do all confer grace on those that receive them worthily; and of these seven Sacraments, that baptism, confirmation, and orders, are to be received but once, neither can they be repeated without great sacrilege.

I admit and receive all the customs, rites, and ceremonies, received and approved of in the Roman Church, in the solemn administration of the said seven Sacraments, and do also receive and embrace all in general, and every thing in particular, that has been defined and declared concerning original sin, and justification, in the Holy Council of Trent.

I do likewise confess, that in the mass there is offered to God a true and proper sacrifice of pardon both for the quick and the dead: and that in the most Holy Sacrament of the eucharist, there is the true, real, and substantial body and blood, together with the soul and divinity of our Lord Jesus Christ; and that the whole substance of the bread is by consecration turned into the body of Christ, and the whole substance of the wine into his blood ; which conversion the Catholic church calls transubstantiation: moreover, I do confess, that under each species Christ is entire, and the true sacrament is received.

I do constantly hold and confess, that there is a Purgatory, and that the souls which are cleansing from their sins do receive benefit from the prayers and devotions of the faithful.

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I do likewise affirm, that the souls of the just and faithful, which at their departure out of this life, have entirely satisfied for the punishment due to the sins that they have committed as also those in Purgatory which have made an end of satisfying for their sins according to the divine pleasure and ordination; as also those who after baptism have committed no sin, do at the moment of their death go immediately into Heaven, where they behold God as he is: and I do condemn, and anathematize the heresy of those, who think that the souls of the just are in a terrestrial paradise till the day of judgment; and that the damned are not tormented any otherwise than by the certainty they have of the torments they are to enter into after the day of judgment.

And I do confess, and affirm, that the Saints now reigning with Christ in Heaven, are to be reverenced, and invoked, and that they offer prayers to God for us, whose relicks are likewise to be reverenced on earth: and moreover, that the images of our Lord Christ, and of our Lady the glorious Virgin Mary, and of all the other saints, are to be kept, used, and reverenced, with due honour and veneration.

I do also believe, that our Lady the most Holy Virgin Mary is the proper and true mother of God, and ought to be called so by the faithful, for having brought forth according to the flesh, without any pain or passion, the true Son of God, and that she always continued a virgin, in, and after her deliverance, having never been defiled by any actual sin.

I do confess, that the power of granting indulgences was left to the Church by our Lord Jesus Christ; the use whereof I do affirm to be healthful and profitable to all christian people.

I do acknowledge the Holy, Catholic, and Apostolic Roman church to be the head, mother and mistress of all other churches in the world; and do hold all that are not subject and obedient to her, to be heretical, schismatical, and disobedient to our Lord Jesus Christ, and his commands, and to the order that he left in the church, and to be aliens from eternal salvation.

I do promise and swear true obedience to the Pope, the Roman bishop, the successor of the blessed prince of the Apostles St. Peter, and vicar of our Lord Jesus Christ on earth, the head of the whole church on earth, and doctor and master of all Christians; and do confess, that all who deny obedience to the said Roman bishop, the Vicar of Christ, are transgressors of the divine commands, and cannot attain to eternal life.

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I do without any scruple receive, approve, and confess all other matters, defined and declared in the sacred canons, and general councils, and chiefly in the holy council of Trent; and do in the same manner condemn, reject, and anathematize every thing that is contrary to the same; together with all heresies condemned, rejected and anathematized by the said Church; namely the diabolical and perverse heresy of Nestorius, and its false teachers Theodorus and Diodorus, and all that have and do follow it, who being persuaded and seduced by the devil, do impiously maintain, that our Lord and Saviour Christ consists of two persons, affirming the Divine Word not to have taken the flesh into a unity of person with itself, but only to have dwelt therein as in a temple; and so will not say, that God was incarnate, or that our Lady, the most Blessed Virgin, was the mother of God, but only the mother of Christ; all which I reject, condemn and anathematize as diabolical heresies; and do believe, and embrace, and approve of all that was determined about this matter, in the council of Ephesus, consisting of two hundred fathers, in which by order of Celestine first bishop of Rome, the blessed St. Cyril, patriarch of Alexandria was president, whom I acknowledge to be a saint now enjoying God, and that all that blaspheme him are in a state of damnation.

Moreover I do condemn all that say, that the passion of our Saviour ought not to be mentioned, and that it is an injury to him to do it; on the contrary, I do believe and confess, that the consideration and discourses thereof are holy, and of benefit to souls.

I do likewise confess and believe, that in pure christianity there is only one law of our Lord Jesus Christ, true God, and true Man; in like manner as there is no more than one only true God, one only faith, and one only baptism; which one only law was preached by all the holy Apostles, and their disciples and successors after the same manner. I do therefore condemn and reject all those who ignorantly teach, that there was one law of St. Thomas, and another law of St. Peter, and that they are so different as not to have any thing to do with one another; as also all other heresies and errors condemned by holy mother Church.

This true and catholic faith, out of which there is no salvation, and which at present I do of my own free will, profess and truly hold and believe, I shall with the help of God endeavour to keep

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entire, and undefiled to my last breath; and constantly to hold and profess, and to procure its being held, professed, preached, and taught by all that are subject to me, or that shall be any ways under my care. I. N. do promise and vow to God, and swear to this holy Cross of our Lord Christ; so help me God, and the contents of this Gospel.

I do also promise, vow and swear to God, this Cross, and these Holy Gospels never to receive into this Church and Bishoprick of the *Serra*, any bishop, archbishop, prelate, pastor or governor whatsoever, but what shall be immediately appointed by the Holy Apostolical see, and the bishop of Rome, and that whomsoever he shall appoint, I will receive and obey as my true pastor, without expecting any message, or having any further dependance upon the patriarch of Babylon, whom I condemn, reject and anathematize, as being a Nestorian heretick and schismatic, and out of the obedience of the holy Roman Church, and for that reason out of a state of salvation; and I do swear and promise, never to obey him any more, nor to communicate with him in any matter. All this that I have professed and declared, I do promise, vow and swear to Almighty God, and the holy Cross of Christ: so help me God, and the contents of these Gospels. Amen."

On the third day it was decreed that an exposition of faith in distinct chapters, should be published for the instruction of the people at large. It was ordered that those books or verses of the scripture which were wanting in the Syriac manuscripts, should be translated into Syriac by Francisco de Roz, and their copies thus completed. The deficiencies were the following; the beginning of the 8th chapter of St. John's Gospel; *seventy* disciples said to be sent by Christ instead of *seventy two,* in the 10th chapter of St. Luke; the Doxology in the Lords Prayer omitted Mat. 5; the second Epistles of St. Peter; the second and third Epistles of St. John; that of Jude; and the Revelation of St. John; in the 4 chapter of St. John's 1st Epistle the words, *qui solvit Jesum, ex Deo non est;* and in the 5th chapter the famous text of *the three witnesses.* In the Old Testament the book of Esther, and in the Apocrypha those of Wisdom and Tobit were wanting.

Corrections of certain other texts were also ordered, where the Syrian copies seemed to favour the doctrines of Nestorius. Three errors attributed to the christians of St. Thomas were condemned —the *transmigration* of souls after death into other bodies either

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of men or beasts—the doctrine of *Necessity*, and that every one may be saved in the religion he professes. That the first of these errors was not the doctrine of their church is evident from many other passages in the acts of the Synod, from whence it appears that they believed the souls of the departed just were in a terrestrial paradise, where they were to remain till the day of judgment. The second charge is grounded on a confusion of necessity with predestination from which, the Archbishop at least ought to have known, it is essentially distinct.

By another decree of that day's session they are accused of accounting it a grievous sin so much as to think or speak of our Saviour's passion—a charge utterly irreconciliable with the fact of their having crosses in all churches and in many houses, of their constant administration of the Lord's Supper, and of their preaching that it was Christ and not the Son of God that suffered on the cross. Frequent meditation was enjoined on this great and fundamental doctrine, and to that end the devotion of the rosary of the Blessed Virgin was especially recommended! The belief of the immaculate conception and sinless purity of the Virgin is specially enjoined, and the unity of the Church under the bishop of Rome as its supreme head on earth, fully declared. The title of universal Bishop, which was heretofore given in their liturgy to the patriarch of Babylon, was ordered to be transferred to the Pope whose name was inserted in their public prayers. The commemoration of Nestorius and his followers on particular days was strictly prohibited and their place supplied with other names from the Roman Calendar. The attendance of christian children on heathen schoolmasters who obliged them to pay reverence to the idols in their house, is strictly forbidden, and the practice of certain christian schoolmasters setting up idols in their schools in order to induce the heathen to send their children, condemned under pain of excommunication. The 14th decree prohibits the reading or possession of certain books, condemned as heretical and mischievous; and under this pretence a grievous and irreparable injury was done not only to their church, but to theological learning generally, by the subsequent destruction of many curious and valuable remains of antiquity. Their Liturgy also and offices were purged from every trace of Nestorian heresy, and at the same time polluted with the doctrine of transubstantiation, which till then was unknown to them. The destruction of the prohibited books and the correction of the others was entrusted to Fran-

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cisco Roz, who executed the barbarous sentence with unsparing fidelity. Preachers were required to be licensed by the bishop of the diocese, or in the vacancy of the see, by the rector of the Jesuit's College at Vaipicotta and a portion of a catechism in the language of the country, to be prepared by the archbishop, was ordered to be read to the people every Lord's day. The general councils, and especially the council of Ephesus in which Nestorius was condemned, were solemnly recognized by the Synod, and the council of Trent received as the rule of their discipline and doctrine; and the last decrees of the session expressed the submission of the Synod to *the Inquisition* established at Goa, as supreme in all points of doctrine or manners, requesting the Inquisitors to delegate their powers to some learned men in the diocese or to the Fathers in the College of Vaipicotta—thus rivetting the chains imposed on them, by the iron rule of that fearful and monstrous tribunal.

The four next sessions of the Synod were occupied in defining the doctrine of the seven sacraments according to the Church of Rome, and in giving special directions for their due administraon. To detail the several decrees on these points would be at once tedious and useless to the general reader. They are chiefly valuable as they prove how little of the corrupt additions of later times was found in the primitive and secluded communion of the christians of St. Thomas.

The eighth session relates entirely to the regulation of Church affairs, in which are many useful and excellent directions mixed with much more of a corrupt and evil tendency; and the last is occupied in the reformation of manners, especially forbidding the adoption of superstitious observances from the heathen around them; and many immoralities which had sprung up as the natural fruit of poverty and ignorance.

The Decrees having been publicly read, the diocese was divided into seventy five parishes, of convenient size according to the circumstances of the case, and a vicar nominated to each. The archbishop, before whom they knelt one by one to kiss his hand, conferred Institution upon the incumbents, and gave them a solemn charge, explanatoryof the nature and importance of the duties entrusted to them. The decrees were then signed by the archbishop and by all the clergy and the deputies of the laity who were present. There were one hundred and thirty three priests, besides other clergy, and six hundred and sixty representatives of the people.

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A solemn *Te Deum* begun by the archbishop kneeling before the High Altar, and chaunted by the whole choir, going in procession round the Church, closed the ceremonial; and the metropolitan, after returning thanks to God for his mercy in bringing the Synod to a happy termination, and to the clergy and people for their attendance, dismissed them with his blessing.

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## V.—*On the state of Education of the Natives in Southern India by A. D. Campbell, Esq. M. C. S.*

*(Extracted from Appendix to report from Select Committee on the affairs of the East India Company.)*

The population of this district* is specified in the enclosed statement at 927,857, or little less than a million of souls. The number of schools is only 533, containing no more than 6,641 scholars, or about 12 to each school, and not seven individuals in a thousand of the entire population.

The Hindoo scholars are in number 6,398, the Mussulman scholars only 243, and the whole of these are males, with the exception of only 60 girls who are all Hindoos exclusively.

The English language is taught in one school only; the Tamul in four; the Persian in 21; the Mahratta in 23; the Teloogoo in 226, and the Carnataca in 235. Besides these there are 23 places of instruction attended by Brahmins exclusively, in which some of the Hindoo sciences, such as theology, astronomy, logic and law, are still imperfectly taught in the Sanscrit language.

In these places of Sanscrit instruction in the Hindoo sciences, attended by youths, and often by persons far advanced in life, education is conducted on a plan entirely different from that pursued in the schools, in which children are taught reading, writing and arithmetic only, in the several vernacular dialects of the country. I shall endeavour to give a brief outline of the latter, as to them the general population of the country is confined; and as that population consists chiefly of Hindoos, I shall not dwell upon the few Mussulman schools in which Persian is taught.

The education of the Hindoo youth generally commences when they are five years old; on reaching this age, the master and scholars of the school to which the boy is to be sent, are invited to the house of his parents; the whole are seated in a circle round an

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* Bellary.

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image of Gunasee, and the child to be initiated is placed exactly opposite to it: the schoolmaster sitting by his side, after having burnt incense and presented offerings, causes the child to repeat a prayer to Gunasee, entreating wisdom. He then guides the child to write with its finger in rice the mystic name of the deity, and is dismissed with a present from the parents according to their ability. The child next morning commences the great work of his education.

Some children continue at school only five years; the parents, through poverty or other circumstances, being often obliged to take them away; and consequently in such cases the merest smattering of an education is obtained: where parents can afford it, and take a lively interest in the culture of their childrens' minds, they not unfrequently continue at school as long as 14 and 15 years.

The internal routine of duty for each day will be found, with very few exceptions and little variation, the same in all the schools. The hour generally for opening school is six o'clock; the first child who enters has the name of *Saras-wattee*, or the Goddess of Learning, written upon the palm of his hand as a sign of honor; and on the hand of the second a cypher is written, to shew that he is worthy neither of praise nor censure; the third scholar receives a gentle stripe; the fourth two; and every succeeding scholar that comes an additional one. This custom, as well as the punishments in native schools, seems of a severe kind. The idle scholar is flogged, and often suspended by both hands to a pulley fixed to the roof, or obliged to kneel down and rise incessantly, which is a most painful and fatiguing, but perhaps a healthy, mode of punishment.

When the whole are assembled, the scholars, according to their number and attainments, are divided into several classes, the lower ones of which are partly under the care of monitors, whilst the higher ones are more immediately under the superintendence of the master, who at the same time has his eye upon the whole school. The number of classes is generally four, and a scholar rises from one to the other according to his capacity and progress. The first business of a child on entering school is to obtain a knowledge of the letters, which he learns by writing them with his finger on the ground in sand, and not by pronouncing the alphabet, as among European nations. When he becomes pretty dextrous in writing with his finger in sand, he has then the privilege of writing either with an iron style on cadjan leaves, or with a reed on paper, and sometimes on the leaves of the *Aristolochia Indica*, or with a kind

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of pencil on the *Hulligi* or *Kadala,* which answers the purpose of slates. The two latter in these districts are the most common. One of these is a common oblong board, about a foot in width and three feet in length; this board when planed smooth has only to be smeared with a little rice and pulverized charcoal, and it is then fit for use. The other is made of cloth, first stiffened with rice-water, doubled into folds resembling a book, and it is then covered with a composition of charcoal and several gums. The writing on either of these may be effaced by a wet cloth. The pencil used is called *Bultapa,* a kind of white clay substance, somewhat resembling a crayon, with the exception of being rather harder.

Having attained a thorough knowledge of the letters, the scholar next learns to write the compounds, or the manner of embodying the symbols of the vowels in the consonants, and the formation of syllables &c., then the names of men, villages, animals, &c., and lastly arithmetical signs. He then commits to memory an addition table, and counts from one to 100, he afterwards writes easy sums in addition and subtraction of money, multiplication and the reduction of money, measures, &c. Here great pains are taken with the scholar in teaching him the fractions of an integer, which descend, not by tens as in our decimal fractions, but by fours, and are carried to a great extent. In order that these fractions, together with the arithmetical tables in addition, multiplication, and the threefold measures of capacity, weight and extent, may be rendered quite familiar to the minds of the scholars, they are made to stand up twice a day in rows, and repeat the whole after one of the monitors.

The other parts of a native education consist in decyphering various kinds of hand-writing in public, and other letters which the schoolmaster collects from different sources, writing common letters, drawing up forms of agreement, reading fables and legendary tales and committing various kinds of poetry to memory, chiefly with a view to attain distinctness and clearness in pronunciation, together with readiness and correctness in reading any kind of composition.

The three books which are most common in all the schools, and which are used indiscriminately by the several castes, are the *Ramayanum, Maha-Bharata* and *Bhagrata*; but the children of the manufacturing class of people have, in addition to the above books peculiar to their own religious tenets, such as the *Nagalingayna, Kutha, Vishvakurma Poorana, Kumaleshera, Ralikamahata;* and those who wear the lingum, such as the *Buwapoorana Rag-*

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*havan-Kunkauya Geeruja-kullana, Unabhavamoorta, Chenna, Busavaswara Poorana, Jurilagooloo, &c.*, which are all considered sacred, and are studied with a view of subserving their several religious creeds.

The lighter kind of stories which are read for amusement are generally the *Punchatantra Bhatalapunchavunsatee, Punklee-Soopooktahuller, Mahantarungenee.* The books on the principles of the vernacular languages themselves, are the several dictionaries and grammars, such as the *Nighantoo, Umara, Subdamumburee, Shubdeemunee Durpana, Vyacurna, Andradeepecva, Andranamasungraha, &c. &c*, but these last and similar books which are most essential, and without which no accurate or extensive knowledge of the vernacular languages can be attained, are, from the high price of manuscripts and the general poverty of the masters, of all books the most uncommon in the native schools, and such of them as are found there are, in consequence of the ignorance, carelessness and indolence of copyists in general, full of blunders, and in every way most incorrect and imperfect.

The whole of the books, however, in the Teloogoo and Carnatic schools, which are by far the most numerous in this district, whether they treat of religion, amusement or the principles of these languages, are in verse, and in a dialect quite distinct from that of conversation and business. The alphabets of the two dialects are the same, and he who reads the one can read, but not understand, the other also. The natives, therefore read these (to them unintelligible) books to acquire the power of reading letters in the common dialects of business; but the poetical is quite different from the prose dialect which they speak and write; and though they read these books, it is to the pronunciation of the syllables, not to the meaning or construction of the words, that they attend. Indeed few teachers can explain, and still fewer scholars understand the purport of the numerous books which they thus learn to repeat from memory. Every schoolboy can repeat *verbatim* a vast number of verses, of the meaning of which he knows no more than the parrot that has been taught to utter certain words. Accordingly, from studies in which he has spent many a day of laborious but fruitless toil, the native scholar gains no improvement, except the exercise of memory and the power to read and write on the common business of life; he makes no addition to his stock of useful knowledge, and acquires no moral impressions. He has spent his youth in reading syllables, not words, and on entering life he meets with hundreds

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and thousands of words in the common course of reading books, of the meaning of which he cannot form even the most distant conjecture; and as to the declension of a noun, or the conjugation of a verb, he knows no more than of the most abstruse problems in Euclid. It is not to be wondered at, with such imperfect education, that in writing a common letter to their friends, orthographical errors and other violations of grammar, may be met with in almost every line written by a native.

The Government could not promote the improved education of their native subjects in these districts more than by patronizing versions, in the common prose and spoken dialect, of the most moral parts of their popular poets and elementary works, now committed to memory in unintelligible verse. He who could read would then understand what he reads, which is far from the case at present. I am acquainted with many persons capable of executing such a task; and, in the Teloogoo language, would gladly superintend it as far as in my power at this distance from the Presidency.

The economy with which children are taught to write in the native schools, and the system by which the more advanced scholars are caused to teach the less advanced, and at the same time to confirm their own knowledge, is certainly admirable, and well deserved the invitation it has received in England. The chief defects in the native schools are the nature of the books and learning taught, and the want of competent masters.

Imperfect, however, as the present education of the natives is, there are few who possess the means to command it for their children. Even were books of a proper kind plentiful, and the master every way adequate to the task imposed upon him, he would make no advance from one class to another, except as he might be paid for his labonr. While learning the first rudiment, it is common for the scholar to pay to the teacher a quarter of a rupee, and when arrived as far as to write on paper, or at the higher branches of arithmetic, half a rupee per mensem. But in proceeding further, such as explaining books which are all written in verse, giving the meaning of sanscrit words, and illustrating the principles of the vernacular languages, such demands are made as exceed the means of most parents. There is therefore no alternative but that of leaving their children only partially instructed, and consequently ignorant of the most essential and useful parts of a liberal education: but there are multitudes who cannot even avail themselves of the advantages of this system, defective as it is.

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I am sorry to state, that this is ascribable to the gradual but general impoverishment of the country. The means of the manufacturing classes have been of late years greatly diminished by the introduction of our own European manufactures in lieu of the Indian cotton fabrics. The removal of many of our troops from our own territories to the distant frontiers of our newly subsidized allies has also, of late years, affected the demand for grain; the transfer of the capital of the country from the native governments and their officers, who liberally expended it in India, to Europeans, restricted by law from employing it even temporarily in India, and daily drawing it from the land, has likewise tended to this effect, which has not been alleviated by a less rigid enforcement of the revenue due to the state. The greater part of the midling and lower classes of the people are now unable to defray the expenses incident upon the education of their offspring, while their necessities require the assistance of their children as soon as their tender limbs are capable of the smallest labour.

It cannot have escaped the Government that of nearly a million of souls in this district, not 7,000 are now at schools, a proportion which exhibits but too strongly the result above stated. In many villages where formerly there were schools, there are now *none*; and in many others where there were large schools, now only a few children of the most opulent are taught, others being unable, from poverty, to attend, or to pay what is demanded.

Such is the state in this district of the various schools in which reading, writing and arithmetic are taught in the vernacular dialects of the country, as has been always usual in India, by teachers who are paid by their scholars. The higher branches of learning, on the contrary, have always in this country been taught in sanscrit, and it has, even in India, been deemed below the dignity of science for her professors to barter it for hire. Lessons in theology, astronomy, logic and law, continue to be given gratuitously, as of old, by a few learned Brahmins to some of their disciples. But learning, though it may proudly decline to sell its stores, has never flourished in any country except under the encouragement of the ruling power, and the countenance and support once given to science in this part of India has long been withheld.

Of the 533 institutions for education now existing in this district, I am ashamed to say not one now derives any support from the State. I have, therefore, received with peculiar satisfaction, the inquiries instituted by the Honorable the Governor in Council on

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this interesting subject, and trust that this part of India may benefit from the liberality which dictated the record of his intention to grant new funds when the same may be deemed expedient, and to restore to their original purpose all funds diverted from this source.

There is no doubt, that in former times, especially under the Hindoo governments, very large grants, both in money and in land, were issued for the support of learning. Considerable *yeomiahs*, or grants of money, now paid to Brahmins from my treasury, and many of the numerous and valuable Shotrium villages, now in the enjoyment of Brahmins in this district, who receive one-fourth, one-third, one-half, two-thirds, and sometimes the whole of their annual revenue, may, I think, be traced to this source. Though it did not consist with the dignity of learning to receive from her votaries hire, it has always in India been deemed the duty of Government to evince to her the highest respect, and to grant to her those emoluments which she could not, consistently with her character, receive from other sources; the grants issued by former Governments, on such occasions, contained therefore no unbecoming stipulations or conditions. They all purport to flow from the free bounty of the ruling power, merely to aid the maintenance of some holy or learned man, or to secure his prayers for the state. But they were almost universally granted to learned or religious persons, who maintained a school for one or more of the sciences, and taught therein gratuitously; and though not expressed in the deed itself, the duty of continuing such gratuitous instruction was certainly implied in all such grants.

The British Government, with its distinguished liberality, has continued all grants of this kind, and even in many cases, where it was evident that they were merely of a *personal*. nature. But they have not, until now, intimated any intention to enforce the implied, but now dormant, condition of these grants. The revenue of the original grantee has descended without much injury to his heirs, but his talents and acquirements have not been equally hereditary; and the descendants of the original grantees will rarely be found to possess either their learning or powers of instruction. Accordingly, considerable alienations of revenue, which formerly did honor to the state, by upholding and encouraging learning, have deteriorated under our rule into the means of supporting ignorance; whilst science, deserted by the powerful aid she formerly received from Government, has often been reduc-

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ed to beg her scanty and uncertain meal from the chance benevolence of charitable individuals; and it would be difficult to point out any period in the history of India when she stood more in need of the proffered aid of Government to raise her from the degraded state into which she has fallen, and dispel the prevailing ignorance which so unhappily pervades the land.

At a former period, I recollect, that the Government, on the recommendation of the College Board, authorized the late Mr. Ross, then collector in the neighbouring district of Cuddapah, to establish experimental schools, with the view of improving the education of the natives; but the lamented death of that zealous and able public officer led to the abandonment of a plan to which his talents and popularity in the country were peculiarly calculated to give success. As secretary to the College and to your Board, I was at that time a warm advocate for such experiment; and if now allowed, I should gladly attempt to superintend some arrangement of that kind in my present provincial situation.

I would propose the appointment of an able *shastry* from amongst the law students at the college, with an addition to his existing pay of only 10 pagodas per mensem, to be placed under me at the principal station of the district, to instruct *gratuitously* all who choose to attend him, in the Hindoo sciences, in the Sanscrit language, and the native school-masters in the grammar of the Teloogoo and Carnataca tongues, being those vernacular here. Such a man I have no doubt that I could soon obtain from the college; for if one with all the requisite qualifications is not at present attached to the institution, there are many that I know there who can speedily qualify themselves for it in a very short time.

Subordinate to this man, and liable to his periodical visitations, I would recommend that 17 schoolmasters in Teloogoo and Carnataca be entertained at from 7 to 14 rupees each per mensem, to be stationed at the 17 Cusba stations under each of my amildars, and liable to their supervision to teach gratuitously these languages. Their lowest pay might be fixed at seven rupees, and might be raised by fixed gradations, with the increasing number of their scholars, as high as the maximum above stated. All of these might be selected from the best informed of the present schoolmasters here; but with reference to the low state of knowledge amongst the present persons of that class, most of them will pre-

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viously require instruction from the head *shastry* in grammar, &c. Though forbidden to demand money, all such persons should be allowed to receive any presents their scholars may offer to them, particularly those usual on entering or quitting school.

The highest expence of such an institution would be 273 rupees, the lowest 154 rupees per mensem. The first expense must necessarily be borne by Government, who alone are able to originate and at first support such a plan. But proper steps may be taken to engage in it the aid of the more opulent classes of the community, and, if practicable, to induce them, in due time, willingly to contribute to the support of such schools. Indeed, I have little doubt that the plan would soon carry with it the united consent, and grateful approbation, of the more respectable and well informed of the inhabitants at large.

It would also greatly accelerate the progress and efficiency of such schools, if Government were to appropriate a moderate annual sum to the purpose of preparing and printing at the College press, or elsewhere, suitable books for the use of these schools, in the prose or common dialects of the Teloogoo and Carnataca languages, on the principle stated by me in a former part of the letter: these should consist of selections from the most approved native school books, tables, proverbs, &c. now in use in the country, to the exclusion, in the first instance, of all new publications whatever. Books of a popular and known character, intelligible to all who read, would thus be procurable at a cheaper rate, and in a more correct state than at present, and the teachers might be employed to dispose of them at low prices.

If public examinations once a year were instituted before the head shastry, and small premiums or badges of distinction were distributed, for the purpose of rewarding, on such occasions, those who are most advanced, a suitable effect might be produced, and a powerful stimulus afforded to the students.

To cover the first expense of these schools, and to provide further for their gradual extension, if found advisable, without entailing any additional or new expense on Government, it might be provided that on the demise of any persons now holding yeomiahs, or alienated lands, a new inquiry be instituted; and that though the same may have been continued for more than one generation by the British Government, it be resumed, and carried to a new fund, to be termed the "School Fund," (to which the proposed expense should also be debited,) unless it is clearly stated in the body of the original

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grant to be "hereditary," or the intention of the ruling power at the time to make such grant hereditary be clearly proved to the satisfaction of Government.

If an arrangement of this kind is sanctioned, I have little doubt, that in a few years the receipts from such a fund would more than counterbalance the disbursements; but even if they did not, the charge would be comparatively trifling. The enactments of the British Parliament contemplate such a charge; the known liberality of the authorities in England on this subject ensure to it sanction; the Supreme Government have set the example; and the principal functionaries in the Madras territories ought perhaps to take blame to themselves that they have waited to be called upon before they stood forth as the organ of public opinion, in a matter of such importance and universal interest. I sincerely hope that it will not, as before, be allowed to sink into oblivion; but that the information submitted by the several collectors, will enable your Board and the Government, to mature, from their suggestions, some practical or at least some experimental plan for the improvement of education, and the support of learning in Southern India.

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We have much pleasure in giving insertion in our Journal to the following letter and Regulations received from the Secretary to the Royal Asiatic Society.—Ed.

VI.—*The Royal Asiatic Society of Great Britain and Ireland.*

14, *Grafton Street, Bond Street, London, March* 1834.

*To*

*The President and Members*
*of the Madras Literary Society*
*and Auxiliary Royal Asiatic Society.*

Gentlemen,

1. I have the honor to acquaint you that an arrangement has recently been sanctioned by the Council of the Royal Asiatic Society, by which the publication of the Transactions of the Society will it is hoped be effected in a more convenient and satisfactory manner than has hitherto been the case; and this arrangement will be acted upon after the completion of the 3d Volume in *quarto*, of which the concluding portion is now in the press.

2. The mode intended to be adopted in future is that of publishing the Transactions of the Society in an *octavo* form, at intervals of three months; each number containing on an average about two

hundred pages of letter press; with such illustrations as may be necessary, and two of such numbers to form a volume. The contents of the quarterly part are intended to comprise, first, original essays or papers like those inserted in the quarto Transactions of the Society; secondly, abstracts of such papers as it may not be deemed necessary to print entire; thirdly, analyses of works connected with the objects of the Society, which, from their scarcity, or other causes, it may be deemed proper to make more generally known; fourthly, notices of the proceedings of the Royal Asiatic Society, its Branch and Auxiliary Societies, of the Oriental Translation Committee, and other institutions, either British or Foreign, of the same nature, as far as they may be attainable; and, lastly, a record of miscellaneous information on any subject of literature, philosophy, science and art, having reference, to the East. Lists of the members; donations to the society, the Oriental Translation Fund, &c. will be given from to time as an appendix to the volumes. The publication of the work has been undertaken by a highly respectable bookseller for the society, but the entire management, control and superintendence remains with the Council as before, and will be governed by the same rules as those under which the Transactions of the society have hitherto been published, viz. Arts. LXII, LXIII, LXIV, and LXV of the printed Regulations of the Society, a copy of which is enclosed.

3. I shall now briefly indicate the advantages which it is presumed the new system of publishing will possess over that which has been followed up to the present time. It is assumed in the first place that the proposed plan will enable the Council to produce papers of a lighter and more diversified character than those which have appeared in the Transactions: the periods of publication also, being definite and frequent, will afford the means of rendering available many valuable contributions on matters of local or temporary, but nevertheless, of considerable importance, which have hitherto been entirely lost to the society for the want of some such channel to make them known; with respect to original communications therefore, it will be seen that much will be done in this way to remedy the inconveniences attendant on the former method of publication. The remaining divisions of the proposed arrangement are entirely new, and it is conceived that they will render the Society's Journal a repository for whatever of value or interest may require to be promulgated in connexion with the views of the Society. The researches of the learned into the history and customs of the nations of the

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East in ancient times, their investigations into the yet remaining monuments of early and extensive civilization, may here be placed in contrast with the labours of those who prefer to trace the progress of improvement in the present day, or suggest the means by which that improvement may be accelerated and enlarged; the deductions of philosophy may be compared with the results of experience, and the theories of the speculative produce schemes of practical utility.

4. But while the Council is thus endeavouring to give greater extension to the operations of the Society, and to increase its claims to public approbation and support in its path of usefulness, it feels that its ability to do so must depend entirely on its securing the earnest and effective co-operation of the members, and more particularly of those resident in the East. I am therefore desired to request that you will have the goodness to give all possible publicity to the subject of this letter, not only among the European residents in your Presidency, but also among such classes of the native community as may in your judgment be deemed likely to take an interest in the subject, and likewise avail yourselves of all convenient opportunities of urging such persons to communicate whatever information they may possess or be able to acquire relative to the philosophy, the metaphysics, the science, the history, the arts, the manners and customs of the inhabitants of the countries in which they reside.

5. In conclusion I have only to express the confidence with which the Council relies on the tried and acknowledged zeal invariably displayed by the Members of the Madras Literary Society and Auxiliary Royal Asiatic Society in the promotion of knowledge, that the peculiar facilities for aiding the exertions of the Society which are placed in their power by circumstances and situation, will be steadily applied in furtherance of that object, assuring them that in so doing they cannot fail to secure the grateful acknowledgements of the Society and the cordial approbation of all who duly value the welfare of our Empire in the East.

I have the honor to be,

Gentlemen,

Your most obedient

Very humble Servant,

H. Harkness,

*Secretary.*

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*Copy of the Articles of the Regulations of the Royal Asiatic Society of Great Britain and Ireland respecting the publication of its Transactions.*

Article LXII.—Communications and Papers, read to the Society, shall, from time to time, be published under the title of Transactions of the Royal Asictic Society of Great Britain and Ireland.

Article LXIII.—All Resident and Non-resident Members of the Society are entitled to receive, gratis, those parts or volumes of the Transactions published subsequently to their election; and to purchase, at an established reduced price, such volumes or parts as may have been previously published.

Article LXIV.—The Council are authorized to present copies of the Transactions to learned Societies and distinguished individuals.

Article LXV.—Every original communication presented to the Society becomes its property; but the author or contributor, may republish it twelve months after its publication by the Society. The Council may publish any original communication presented to the Society, in any way, and at any time judged proper, but if printed in the Society's Transactions twenty-five copies of it shall be presented to the author or contributor, when the volume or part in which it is inserted is published. Such papers as the Council may not see fit to publish may, with its permission, be returned to the author, upon the condition that if it be published by him a printed copy of it shall be presented to the Society.

(A true Copy.)

H. Harkness,

*Secretary.*

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## METEOROLOGICAL REGISTER KEPT AT THE MADRAS

| | Standard Barometer No. 3 by Gilbert. | | | | | | | Standard Therm. by Trought | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sun Rise. | 10 A. M. | Noon. | 2 P. M. | Sun Set. | 8 P. M. | 10 P. M. | S. Rise. | 10 A. M. | Aft. Noon. | 2 P. M. | S. Set. | 8 P. M. |
| | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 29,874 | 29,916 | 29,890 | 29,868 | 29,850 | 29,872 | 29,904 | 85,9 | 92,3 | 96,0 | 93,4 | 87,7 | 89,7 |
| 2 | ,882 | ,902 | ,872 | ,850 | ,824 | ,820 | ,822 | 86,0 | 94,2 | 97,0 | 97,0 | 88,8 | 86,8 |
| 3 | ,822 | ,876 | ,860 | ,844 | ,799 | ,818 | ,840 | 88,5 | 94,6 | 98,0 | 94,9 | 89,0 | 85,7 |
| 4 | ,852 | ,888 | ,880 | ,860 | ,850 | ,876 | ,892 | 84,2 | 93,3 | 93,2 | 92,0 | 88,4 | 86,0 |
| 5 | ,902 | ,964 | ,938 | ,906 | ,888 | ,916 | ,930 | 84,1 | 90,0 | 90,3 | 90,0 | 86,4 | 85,7 |
| 6 | ,932 | ,952 | ,926 | ,886 | ,864 | ,888 | ,906 | 83,9 | 88,4 | 89,2 | 88,9 | 85,9 | 84,7 |
| 7 | ,894 | ,948 | ,922 | —— | ,854 | ,866 | ,898 | 84,3 | 91,4 | 90,5 | --— | 86,1 | 85,7 |
| 8 | ,876 | —— | ,878 | ,864 | ,860 | ,890 | ,886 | 84,4 | --— | 94,9 | 89,0 | 87,0 | 86,2 |
| 9 | ,880 | ,886 | ,876 | ,852 | ,848 | ,862 | ,886 | 84,0 | 86,4 | 91,6 | 90,4 | 86,2 | 84,9 |
| 10 | ,858 | ,884 | ,874 | ,842 | ,828 | ,886 | —— | 83,5 | 90,8 | 91,6 | 91,5 | 87,9 | 87,[illegible] |
| 11 | ,860 | ,906 | ,880 | ,858 | ,852 | ,870 | .... | 84,8 | 91,6 | 96,5 | 94,3 | 89,0 | 87,8 |
| 12 | ,852 | ,902 | ,872 | ,830 | ,820 | ,824 | .... | 85,8 | 92,3 | 94,6 | 97,4 | 91,0 | 89,7 |
| 13 | ,842 | ,860 | ,842 | ,822 | ,818 | ,852 | .... | 86,4 | 89,9 | 93,6 | 95,1 | 88,9 | 87,0 |
| 14 | ,904 | ,902 | ,900 | ,886 | ,868 | ,862 | .... | 83,0 | 83,5 | 86,5 | 90,0 | 86,2 | 85,0 |
| 15 | ,892 | ,928 | ,892 | ,853 | ,850 | ,952 | .... | 83,7 | 88,3 | 90,0 | 92,0 | 89,1 | 88,3 |
| 16 | ,862 | ,872 | ,850 | ,838 | ,820 | ,818 | .... | 85,3 | 89,3 | 92,6 | 92,8 | 88,7 | 87,0 |
| 17 | ,840 | ,874 | ,848 | ,814 | ,804 | ,826 | .... | 83,6 | 89,0 | 94,9 | 98,4 | 84,4 | 82,7 |
| 18 | ,834 | ,864 | ,842 | ,830 | ,826 | ,840 | ,838 | 83,8 | 88,6 | 92,5 | 93,7 | 87,8 | 86,2 |
| 19 | ,842 | ,852 | ,840 | ,825 | ,808 | ,826 | —— | 85,4 | 89,0 | 93,0 | 94,1 | 89,2 | 86,6 |
| 20 | ,840 | ,854 | ,838 | ,814 | ,808 | ,836 | .... | 85,0 | 87,2 | 90,0 | 91,3 | 85,2 | 83,4 |
| 21 | ,832 | ,860 | ,842 | ,818 | ,808 | ,828 | .... | 84,0 | 84,9 | 86,6 | 88,8 | 85,5 | 82,2 |
| 22 | ,834 | —— | ,844 | ,820 | ,812 | ,822 | .... | 82,4 | --— | 88,1 | 89,8 | 85,0 | 83,3 |
| 23 | ,836 | ,878 | ,856 | ,830 | ,820 | ,828 | ,844 | 82,2 | 86,8 | 88,0 | 89,4 | 85,7 | 84,2 |
| 24 | ,844 | ,886 | ,874 | ,846 | ,818 | ,842 | ,856 | 82,5 | 87,1 | 89,8 | 90,0 | 85,1 | 84,3 |
| 25 | ,850 | ,866 | ,852 | ,826 | ,826 | ,848 | ,860 | 82,0 | 88,0 | 90,0 | 89,5 | 87,0 | 85,5 |
| 26 | ,850 | ,876 | ,872 | ,842 | ,862 | ,886 | —— | 83,0 | 90,4 | 93,8 | 91,1 | 86,7 | 85,6 |
| 27 | ,890 | ,940 | ,900 | ,894 | ,892 | ,886 | .... | 83,3 | 91,0 | 94,2 | 94,9 | 83,7 | 86,3 |
| 28 | ,902 | ,950 | ,932 | ,900 | ,876 | ,900 | ,902 | 83,0 | 87,0 | 90,5 | 93,0 | 87,8 | 86,2 |
| 29 | ,866 | ,908 | ,866 | ,842 | ,818 | ,834 | —— | 84,5 | 87,6 | 92,0 | 93,8 | 88,0 | 87,7 |
| 30 | ,854 | ,892 | ,857 | ,830 | ,816 | ,838 | .... | 84,2 | 88,0 | 91,0 | 93,6 | 90,8 | 87,0 |
| **Mean** | 29,863 | 29,899 | 29,874 | 29,844 | 29,830 | 29,857 | 29,880 | 84,2 | 89,3 | 92,0 | 92,4 | 87,3 | 85,9 |

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**OBSERVATORY; FOR THE MONTH OF JUNE 1834.**

| | Dep. of wet bulb Thermometer. | | | | | | | Rain. | | Evaporation. | Wind. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S. Rise | 10 A. M. | Aft. N. | 2 P. M. | S. Set. | 8 P. M. | 10 P. M. | S. R. | S. S. | | | |
| | ° | ° | ° | ° | ° | ° | ° | Ins. | Ins. | Ins. | | |
| 1 | 5,3 | 11,3 | 12,0 | 8,6 | 6,7 | 7,2 | 7,2 | 0,007 | | | sw. w. & s. | Mstly. clr. ltg. Th. |
| 2 | 5,2 | 14,2 | 9,4 | —— | —— | 4,0 | —— | | | | w. n. nw. & e. | [at night. |
| 3 | 8,7 | 12,6 | 14,0 | 11,9 | 5,3 | 2,1 | 2,1 | | | | nw. e. & s. | |
| 4 | 3,0 | 12,3 | 9,2 | 9,0 | 6,6 | 3,5 | 2,2 | | | 2,847 | w. nw. s. | Mstly. clr. da. |
| 5 | 2,3 | 5,5 | 4,8 | 6,0 | 3,4 | 2,9 | 2,3 | | | | s. se. & e. | & ngt. Lightng. |
| 6 | 1,7 | 4,4 | 6,0 | 5,4 | 2,9 | 2,2 | 2,8 | | | | sw. se. & e. | |
| 7 | 1,5 | 6,9 | 6,5 | —— | 2,3 | 1,7 | —— | | | | sw. e. & se. | [Lightng. |
| 8 | 2,9 | —— | 9,9 | 8,8 | 3,3 | 2,6 | 2,8 | | 0,104 | | sw. nw. & se. | Mo. cl. & some rn. |
| 9 | 4,0 | 5,4 | 8,1 | 6,4 | 3,2 | 2,1 | 2,2 | | | | w. s. se. | Mo. cl. Ltg. at nt. |
| 10 | 3,0 | 8,0 | 6,1 | 7,0 | 4,0 | 3,5 | | | | | s. se. & sw. | Do. |
| 11 | 6,8 | 11,6 | 15,0 | 11,3 | 5,2 | 4,0 | | | | 3,431 | w. nw. se. | Mo. cl. Ltg. Th. |
| 12 | 7,8 | 12,5 | 14,6 | 15,4 | 7,0 | 6,7 | | | | | nw. & se. | Mo. cl. Ltg. & sm. |
| 13 | 6,4 | —— | 10,6 | 15,1 | 5,1 | 3,5 | | 0,167 | | | sw. nw. & e. | Do. [rn. |
| 14 | 3,1 | 3,3 | 6,7 | 10,2 | 2,6 | 1,4 | | | 0,347 | | sw. & se. | Cl. dy. Ltg. |
| 15 | 4,0 | 8,3 | 9,0 | 12,0 | 5,1 | 4,3 | | | | | w. nw. & sw. | Do. Th. |
| 16 | 7,4 | 10,0 | 12,6 | 10,8 | 4,9 | 3,2 | .... | | 0,028 | | w. nw. & se. | Do. sm. rn. |
| 17 | 4,6 | 9,0 | 13,4 | 18,4 | 4,2 | 2,5 | .... | 0,153 | 0,153 | | w. nw. s. | Cl. Th. Ltg. & rn. |
| 18 | 5,8 | 8,5 | 8,0 | 12,2 | 4,1 | 4,0 | 2,3 | 0,146 | | 2,903 | w. & sw. | Cl. Ltg. Th. |
| 19 | 7,5 | 9,8 | 11,0 | 12,4 | 6,2 | 4,6 | | | | | w. & sw. | Do. Rain. |
| 20 | 5,1 | 7,0 | 9,0 | 9,7 | 2,3 | —— | | 0,507 | 0,021 | | w. & sw. | Do. Do. |
| 21 | 4,2 | 3,9 | 4,9 | 6,6 | 3,5 | 2,2 | | 0,389 | | | w. & sw. | Do. Do. |
| 22 | 2,6 | —— | 6,1 | 7,5 | 5,0 | 3,5 | | 0,097 | | | w. & sw. | Do. Do. |
| 23 | 2,4 | 5,8 | 6,0 | 6,4 | 3,9 | —— | 1,7 | 0,208 | | | sw. w. & s. | Mo. cl. & Ltg. |
| 24 | 3,5 | 7,6 | 9,8 | 7,0 | 3,6 | 2,8 | 2,0 | | | | sw. w. se. | Mostly clear. |
| 25 | 2,1 | 8,0 | 9,5 | 6,5 | 6,0 | 4,5 | 1,8 | | | 2,021 | sw. w. nw. s. | Do. |
| 26 | 3,0 | 10,4 | 12,8 | 7,1 | 3,9 | 3,1 | | | | | w. nw. se. | Do. [rn. |
| 27 | 5,3 | 10,0 | 12,2 | 11,1 | 2,9 | 6,0 | | | | | sw. & w. | Mo. cl. Ltg. Th. & |
| 28 | 4,0 | 4,0 | —— | 13,0 | 6,8 | 5,2 | 4,4 | 0,104 | | | w. nw. se. | Do. Do. |
| 29 | 4,5 | 9,6 | 12,0 | —— | —— | —— | | | | | sw. w. s. | Do. Do. |
| 30 | 2,2 | 5,7 | 9,0 | 11,6 | 7,8 | 4,0 | | | | | w. nw. & s. | Do. Do. rain. |
| n | 4,3 | 8,4 | 9,6 | 9,2 | 4,6 | 3,6 | 2,8 | | | | | |

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# METEOROLOGICAL REGISTER kept at the MADRAS

| | Standard Barometer No 3. by Gilbert. | | | | | | | Standard Therm. by Troughto | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sun Rise. | 10 A. M. | Noon. | 2 P. M. | Sun Set. | 8 P. M. | 10 P. M. | Sun Rise. | 10 A. M. | Aft. Noon. | 2 P. M. | Sun Set. | 8 P. M. | |
| | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | ° | ° | ° | ° | ° | ° | ° |
| 1 | 29,850 | 29,950 | 29,880 | 29,844 | 29,820 | 29,850 | —— | 84,0 | 87,2 | 89,9 | 92,4 | 86,7 | 85,8 | -- |
| 2 | ,844 | ,890 | ,870 | ,848 | ,842 | ,864 | 29,866 | 84,0 | 89,3 | 93,2 | 95,4 | 86,2 | 84,8 | 84 |
| 3 | ,888 | ,918 | —— | ,850 | ,854 | ,888 | ,920 | 83,8 | 87,5 | -- | 93,0 | 86,2 | 85,8 | 85, |
| 4 | ,900 | ,922 | ,901 | ,870 | ,852 | ,878 | —— | 84,5 | 90,9 | 91,6 | 91,7 | 87,2 | 85,8 | --- |
| 5 | ,884 | ,914 | ,906 | ,864 | ,842 | ,862 | ,882 | 80,0 | 79,6 | 81,5 | 83,2 | 83,2 | 82,0 | 81, |
| 6 | ,854 | ,868 | ,856 | ,836 | ,830 | ,854 | ,866 | 79,0 | 83,7 | 86,9 | 88,0 | 85,0 | 83,2 | 82, |
| 7 | ,856 | ,872 | ,868 | ,846 | ,848 | ,868 | —— | 81,2 | 84,4 | 86,0 | 88,3 | 86,1 | 84,2 | — |
| 8 | ,890 | ,920 | ,890 | ,868 | ,850 | ,862 | —— | 81,0 | 80,9 | 83.1 | 86,5 | 84,1 | 82,9 | ... |
| 9 | ,86[illegible] | ,914 | ,904 | ,840 | ,834 | ,852 | ,852 | 79,9 | 76,8 | 76,0 | 77,5 | 79,5 | 78,8 | 78, |
| 10 | ,864 | ,872 | ,862 | ,836 | ,826 | ,848 | ,852 | 79,0 | 83,3 | 85,3 | 85,6 | 83,1 | 82,6 | 82, |
| 11 | ,850 | ,868 | ,856 | ,830 | ,832 | ,856 | —— | 80,0 | 84,5 | 87,7 | 87,0 | 84,2 | 84,0 | — |
| 12 | ,850 | ,866 | ,848 | ,824 | ,806 | ,820 | ,820 | 81,0 | 87,1 | 89,0 | 92,2 | 86,2 | 84,8 | 84, |
| 13 | ,810 | ,836 | ,828 | ,808 | ,796 | ,796 | ,812 | 80,3 | 87,2 | 90,2 | 88,8 | 87,0 | 86,3 | 85, |
| 14 | ,800 | ,868 | ,806 | ,791 | ,792 | ,796 | —— | 83,7 | 88,0 | 90,6 | 92,0 | 87,2 | 86,0 | — |
| 15 | ,806 | ,850 | ,828 | ,814 | ,808 | ,822 | ,[illegible]22 | 83,2 | 86,6 | 90,0 | 92,8 | 86,8 | 84,0 | 81, |
| 16 | ,820 | ,860 | ,850 | ,832 | ,826 | ,852 | —— | 84,0 | 86,8 | 86,4 | 86,0 | 84,0 | 83,6 | --- |
| 17 | ,850 | ,898 | ,872 | ,850 | ,838 | ,838 | .... | 81,9 | 79,4 | 80,0 | 80,7 | 80,4 | 79,5 | ... |
| 18 | ,850 | ,890 | ,872 | ,836 | ,824 | ,842 | .... | 79,9 | 80,0 | 81,1 | 82,9 | 82,6 | 81,6 | .. |
| 19 | ,856 | ,876 | ,854 | ,836 | ,832 | ,836 | .... | 82,2 | 84,4 | 86,8 | 87,8 | 82,0 | 82,9 | ... |
| 20 | ,860 | ,886 | ,866 | ,840 | ,834 | ,869 | ,864 | 79,8 | 85,1 | 87,6 | 88,7 | 87,6 | 84,6 | 84, |
| 21 | ,848 | ,888 | ,876 | ,848 | ,833 | ,862 | —— | 83,4 | 83,8 | 84,5 | 85,2 | 85,1 | 84,6 | |
| 22 | ,864 | ,900 | ,894 | ,866 | ,860 | ,868 | .... | 81,0 | 82,7 | 84,6 | 86,2 | 83,9 | 82,9 | |
| 23 | ,858 | ,878 | ,864 | ,836 | ,816 | ,850 | .... | 80,7 | 82,5 | 83,1 | 84,6 | 84,6 | 84,1 | |
| 24 | ,816 | ,844 | ,826 | ,816 | ,790 | ,794 | .... | 81,1 | 82,4 | 83,3 | 84,5 | 81,1 | 81,3 | |
| 25 | ,790 | ,808 | ,794 | ,770 | ,752 | ,760 | .... | 79,8 | 83,5 | 85,5 | 85,9 | 85,2 | 84,7 | |
| 26 | ,768 | ,804 | ,796 | ,782 | ,776 | ,774 | ,782 | 81,8 | 86,4 | 88,0 | 89,9 | 89,0 | 85,8 | 85, |
| 27 | ,800 | ,834 | ,805 | ,775 | ,762 | —— | ,822 | 83,8 | 87,0 | 89,0 | 91,0 | 90,9 | ---— | 87, |
| 28 | ,824 | ,860 | ,842 | ,826 | ,818 | ,842 | —— | 83,6 | 86,8 | 89,0 | 87,2 | 88,7 | 86,0 | |
| 29 | ,848 | ,870 | ,884 | ,820 | ,826 | ,868 | .... | 84,0 | 85,3 | 88,2 | 90,0 | 85,8 | 84,0 | |
| 30 | ,852 | ,874 | ,850 | ,808 | ,814 | ,860 | .... | 82,5 | 83,8 | 87,8 | 85,5 | 82,7 | 81,6 | |
| 31 | ,846 | ,888 | ,868 | ,840 | ,850 | ,870 | .... | 82,4 | 83,0 | 85,4 | 86,2 | 86,0 | 82,7 | |
| Mean | 29,844 | 29,877 | 29,857 | 29,831 | 29,822 | 29,843 | 29,847 | 81,8 | 84,5 | 86,4 | 87,6 | 85,1 | 83,7 | |

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## OBSERVATORY; FOR THE MONTH OF JULY 1834.

| | Dep. of wet bulb Thermometer. | | | | | | | Rain. | | Evaporation. | Wind. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S. Rise. | 10 A. M. | Aft. N. | 2 P. M. | S. Set. | 8 P. M. | 10 P. M. | S. R. | S. S. | | | |
| | ° | ° | ° | ° | ° | ° | ° | Ins. | Ins. | Ins. | | |
| 1 | 0,0 | 3,3 | 5,9 | 8,4 | 2,9 | 2,0 | | 0,118 | | 3,153 | W. SW. & NW. | Cl. dy. Ltg. & Sh. |
| 2 | 0,2 | 5,5 | 9,4 | 11,9 | 2,7 | 1,6 | 1,2 | | 0,062 | | W. NW. & SE. | Mo. cl. some rn. |
| 3 | 0,1 | 3,9 | — | 9,0 | 2,0 | 1,3 | 0,1 | | | | SW. NW. & SE. | Do. d. clr. n. Li. |
| 4 | 1,7 | 6,7 | 6,8 | — | — | — | | | | | W. SE. & E. | M. clr. cl. at n. li. s. r. |
| 5 | — | — | — | 3,0 | 2,7 | 2,1 | 1,7 | 0,069 | 0,021 | | N. W. SW. & SE. | M. cl. Th. l. & hy. rn. |
| 6 | 3,0 | 3,7 | 6,7 | 6,5 | 3,8 | 3,0 | 2,3 | 0,660 | | | W. & SW. | M. clr. some r. at n. |
| 7 | 2,2 | 4,6 | 5,8 | 7,1 | 3,9 | 2,0 | | 0,097 | | | S. W. & SE. | M. cl. L. & hy. r. at n. |
| 8 | 2,0 | 1,9 | 3,7 | 5,7 | 2,6 | 1,7 | | 1,486 | 0,014 | | W. SW. & NW. | M. cl. L. & some r. |
| 9 | 2,4 | 1,0 | 0,0 | 0,5 | 1,3 | 0,6 | | 0,076 | 1,396 | 2,000 | W. SW. & NW. | Mostly clear. |
| 10 | 1,0 | 3,4 | 5,4 | 3,8 | 2,3 | 2,1 | 2,0 | | | | SW. W. & NW. | Do. Ltg. |
| 11 | 0,5 | 3,5 | 4,3 | 3,8 | 3,0 | 2,8 | | | | | W. NW. & SE. | Do. Do. |
| 12 | 1,1 | 5,2 | 6,0 | 9,2 | 2,7 | 1,6 | 1,1 | | | | SW. W. & S. | Mo. clr. Li. & Th. |
| 13 | 2,3 | 6,7 | 6,2 | 6,8 | 3,8 | 2,5 | 2,1 | | | | N. W. NW. & E. | M. clr. L. & Th. & Sh |
| 14 | 3,8 | 8,0 | 9,6 | 11,5 | 3,7 | 2,2 | | | | | W. NW. E. | M. cl. L. & some r. |
| 15 | 5,2 | 9,9 | 10,0 | 12,8 | 2,9 | 4,0 | 4,8 | 0,049 | | | SW. W. & S. | Do. |
| 16 | 3,2 | 5,9 | 6,5 | 6,0 | 3,8 | 3,8 | | | | 0,813 | SW. W. & N. | Do. |
| 17 | 2,9 | 1,4 | 1,5 | 11,7 | 0,9 | 0,5 | | 0,826 | 0,500 | | SW. SE. S. | Cl. & r. with Ltg. |
| 18 | 0,4 | 0,5 | 0,8 | 2,5 | 1,1 | 1,4 | | 0,653 | 0,104 | | SE. & SW. | Do. |
| 19 | 0,6 | 3,9 | 4,8 | 5,1 | 1,5 | 2,1 | | | | | W. SW. W. | M. cl. L. & sm. r. |
| 20 | 1,8 | 4,1 | 4,8 | 5,7 | 4,6 | 1,8 | 1,3 | 0,049 | 0,104 | | NW. SE. & S. | some rain, |
| 21 | 2,4 | 4,8 | 3,9 | 4,0 | 3,3 | 1,6 | | 0,042 | | | W. & S. | |
| 22 | 2,0 | 3,7 | 5,1 | 7,2 | 4,4 | 4,7 | | | | | SW. & W. | |
| 23 | 3,7 | 5,3 | 6,7 | 6,6 | 4,1 | 4,6 | | | | 1,375 | W. & SW. | Mo. cl. dy. & |
| 24 | 4,3 | 4,4 | 4,3 | 5,1 | 1,9 | 3,1 | | | 0,151 | | SW. NW. & W. | Night Lightg. |
| 25 | 3,8 | 5,4 | 7,0 | 7,6 | 6,2 | — | | 0,014 | | | SW. & W. | some rain, |
| 26 | 5,8 | 8,1 | 9,0 | 9,7 | — | 3,3 | 5,4 | | | | SW. W. & SE. | |
| 27 | 4,2 | 9,0 | 10,0 | 11,2 | 9,9 | — | 5,1 | | | | SW. W. & NW. | |
| 28 | 6,6 | 8,8 | 9,7 | 6,4 | 6,5 | 4,0 | | | | | S. W. NW. | [rn. |
| 29 | 7,0 | 7,0 | 7,7 | 10,5 | 3,8 | 2,2 | | | | | W. NW. W. | Cl. Th. Ltg. & hy, |
| 30 | 5,3 | 5,4 | 7,8 | 5,7 | 2,7 | 2,1 | | 0,590 | 0,375 | 2,361 | SW. W. & NW. | Do. rn. |
| 31 | 3,6 | 3,5 | 6,4 | 6,6 | 6,0 | 4,2 | | 0,118 | | | SW. W. & S. | Clo. Lightning. |
| Mean | 2,8 | 4,9 | 6,1 | 6,7 | 3,5 | 2,5 | 2,5 | | | | | |

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## METEOROLOGICAL REGISTER kept at the MADRAS

| | Standard Barometer No. 3 by Gilbert. | | | | | | | Standard Therm. by Troughton | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sun Rise. | 10 A. M. | Noon. | 2 P. M. | Sun Set. | 8 P. M. | 10 P. M. | S. Rise. | 10 A. M. | Noon. | 2 P. M. | S. Set. | 8 P. M. | 10 P. M. |
| | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | Ins. | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 29,892 | 29,932 | 29,904 | 29,868 | 29,866 | 29,898 | —— | 80,3 | 84,0 | 85,7 | 88,2 | 87,5 | 86,6 | —— |
| 2 | ,914 | ,952 | ,920 | ,872 | ,852 | ,866 | 29,874 | 83,0 | 85,9 | 88,8 | 88,9 | 87,5 | 86,4 | 85,4 |
| 3 | ,872 | ,904 | ,864 | ,840 | ,822 | ,852 | ,860 | 83,0 | 86,2 | 88,5 | 90,8 | 90,9 | 89,3 | 88,6 |
| 4 | ,862 | ,884 | ,858 | ,832 | ,822 | ,848 | ,850 | 83,5 | 86,6 | 89,6 | 91,4 | 91,3 | 89,9 | 88,6 |
| 5 | ,844 | ,868 | ,844 | ,812 | ,816 | ,840 | —— | 82,4 | 86,8 | 90,3 | 92,0 | 90,1 | 87,5 | —— |
| 6 | ,856 | ,878 | ,846 | ,816 | ,834 | ,862 | ...... | 85,4 | 87,0 | 89,0 | 91,0 | 90,4 | 86,8 | .... |
| 7 | ,876 | ,950 | ,924 | ,874 | ,856 | ,872 | ,906 | 84,5 | 86,4 | 90,0 | 92,8 | 91,7 | 88,8 | 87,6 |
| 8 | ,930 | —— | ,952 | ,922 | ,900 | ,912 | ,952 | 85,0 | —— | 91,8 | 94,0 | 87,4 | 85,0 | 86,2 |
| 9 | ,954 | ,996 | ,968 | ,936 | ,920 | ,938 | ,960 | 83,7 | 89,0 | 92,0 | 90,7 | 88,2 | 85,9 | 84,8 |
| 10 | ...... | ,986 | ,980 | ,920 | ,916 | ,938 | ,990 | —— | 88,0 | 89,4 | 91,0 | 87,3 | 86,8 | 85,8 |
| 11 | ,960 | 30,024 | ,970 | ,926 | ,928 | ,952 | ,960 | 82,7 | 87,3 | 90,4 | 90,0 | 88,0 | 86,8 | 85,0 |
| 12 | ,966 | ,050 | ,974 | ,932 | ,950 | ,952 | ‘960 | 83,8 | 86,8 | 89,8 | 89,7 | 86,6 | 84,4 | 83,4 |
| 13 | ,928 | 29,944 | ,934 | ,906 | ,892 | ,950 | ,936 | 82,4 | 88,8 | 89,0 | 89,0 | 86,5 | 84,4 | 82,9 |
| 14 | ,904 | ,926 | ,904 | ,882 | ,858 | ,898 | ,892 | 81,2 | 88,0 | 90,7 | 89,8 | 86,0 | 84,5 | 85,2 |
| 15 | ,878 | ,926 | ,882 | ,862 | ,892 | ,930 | —— | 82,8 | 87,0 | 89,1 | 88,8 | 87,6 | 85,4 | |
| 16 | ,910 | ,952 | ,932 | ,880 | —— | ,949 | ...... | 83,7 | 85,2 | 87,8 | 86,6 | —— | 84,4 | |
| 17 | ,890 | ,918 | ,912 | ,868 | ,852 | ,899 | ,914 | 83,0 | 85,0 | 87,0 | 86,9 | 86,8 | 84,4 | 82,0 |
| 18 | ,872 | ,918 | ,900 | ,850 | ,860 | ,880 | ,924 | 80,2 | 86,9 | 90,0 | 89,1 | 86,3 | 84,3 | 83,0 |
| 19 | ,904 | ,942 | ,914 | ,972 | ,856 | ,892 | ,900 | 81,0 | 84,1 | 88,7 | 86,9 | 83,9 | 83,0 | 81,0 |
| 20 | ,894 | ,908 | ,898 | ,858 | ,852 | ,882 | ,900 | 80,7 | 84,9 | 88,2 | 87,4 | 83,0 | 82,6 | 81,6 |
| 21 | ,864 | ,912 | ,896 | ,862 | ,852 | ,880 | —— | 80,8 | 85,8 | 87,6 | 87,9 | 84,9 | 84,6 | |
| 22 | ,894 | ,942 | ,940 | ,924 | ,908 | ,952 | | 79,5 | 80,9 | 82,0 | 83,0 | 82,7 | 81,2 | |
| 23 | ,910 | ,980 | ,938 | ,914 | ,858 | ,872 | | 77,2 | 79,3 | 80,1 | 81,8 | 82,0 | 81,7 | |
| 24 | ,856 | ,888 | ,842 | ,826 | ,838 | —— | | 89,2 | 80,3 | 79,3 | 80,6 | 80,3 | —— | |
| 25 | ,832 | ,882 | ,851 | ,839 | ,830 | ,858 | | 79,2 | 80,8 | 81,8 | 79,6 | 80,5 | 80,0 | |
| 26 | ,834 | ,862 | ,832 | ,816 | ,814 | ,832 | ,852 | 79,4 | 80,8 | 82,0 | 83,2 | 83,0 | 81,4 | 86,5 |
| 27 | ,816 | ,844 | ,824 | ,814 | ,804 | ,816 | ,836 | 48,7 | 82,9 | 85,9 | 85,4 | 84,4 | 83,7 | 84,0 |
| 28 | ,822 | ,834 | ,830 | ,800 | ,800 | ,828 | —— | 80,4 | 86,2 | 87,0 | 85,9 | 81,5 | 83,0 | |
| 29 | ,820 | ,860 | ,828 | ,800 | ,798 | ,828 | | 81,6 | 85,4 | 88,0 | 89,8 | 83,8 | 83,4 | |
| 30 | ,812 | ,850 | ,816 | ,802 | ,808 | ,838 | | 81,2 | 82,6 | 84,8 | 85,1 | 82,8 | 81,5 | |
| 31 | ,818 | ,886 | ,856 | ,830 | ,836 | ,864 | | 80,9 | 81,2 | 82,2 | 83,4 | 82,3 | 81,8 | |
| Mean | 29,877 | 29,923 | 29,897 | 29,865 | 29,856 | 29,886 | 29,910 | 82,0 | 85,0 | 87,1 | 87,7 | 85,8 | 84,6 | 84,8 |

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OBSERVATORY; FOR THE MONTH OF AUGUST 1834.

| | Dep. of wet bulb Thermometer. | | | | | | | Rain. | | Evaporation. | Wind. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S. Rise. | 10 A. M. | Noon. | 2 P. M. | S. Set. | 8 P. M. | 10 P. M. | S. R. | S. S. | | | |
| | ° | ° | ° | ° | ° | ° | ° | Ins. | Ins. | Ins. | | |
| 1 | 3,3 | 6,0 | 6,9 | 7,7 | 6,5 | 6,8 | ---- | | | | SW. & NW. | Cloudy. |
| 2 | 5,5 | 7,7 | 8,8 | 8,9 | 7,0 | 7,4 | 8,0 | | | | W. NW. & SW. | Mostly cloudy. |
| 3 | 6,9 | 8,4 | 8,5 | 9,3 | 9,0 | 9,8 | 9,0 | | | | W. & NW. | M. cl. clr. at nt. |
| 4 | 8,5 | 9,4 | 10,0 | 12,0 | 11,8 | 10,9 | 9,6 | | | | W. NW. SW. | Mostly clear. |
| 5 | 6,4 | 8,0 | 11,1 | 12,0 | 5,6 | 4,7 | | | | | W. & NW. | Mostly cloudy. |
| 6 | 5,9 | 9,0 | 9,0 | 9,8 | 8,4 | 5,3 | | | | | W. SW. & W. | Mo. cl. Ltg. Th. |
| 7 | 4,7 | 7,6 | 10,8 | 12,3 | 11,4 | ---- | 3,8 | | | | W. SW. & NW. | Do. clr. at nt. |
| 8 | 7,0 | ---- | 12,1 | 12,2 | 4,6 | 2,8 | 3,6 | | | | W. & NW. | M. clr. & cl. at n. |
| 9 | 5,8 | 10,1 | 12,5 | 8,7 | 6,2 | 4,4 | 3,3 | | | | W. & NW. | Do. |
| 10 | ---- | 8,0 | 7,9 | 9,0 | 4,1 | 3,3 | 2,3 | | 0,278 | | W. SW. & NW. | M. clr. r. in the m. |
| | | | | | | | | | | | | [Ltg. Th. |
| 11 | 3,7 | 6,9 | 8,4 | 6,5 | 5,0 | 3,8 | 3,0 | | | | NW. & SE. | M. cl. clr. nt nt. |
| 12 | 4,8 | 6,3 | 7,9 | 6,2 | 4,1 | 2,6 | 1,7 | | | | W. S. & NE. | M. clr. & Ltg. |
| 13 | 4,4 | 7,3 | 6,0 | 5,5 | 4,0 | 3,9 | 2,9 | | | 3,056 | W. SE. S. | Do |
| 14 | 3,7 | 7,5 | 8,4 | 6,8 | 4,8 | 3,5 | 3,2 | | | | S. SW. & SE. | Do & Th. |
| 15 | 5,8 | 7,5 | 6,8 | 5,3 | 4,2 | 3,6 | | | | | W. E. & S. | M. cl. Th. & Ltg. |
| 16 | 4,2 | 4,2 | 5,8 | 4,6 | ---- | 3,6 | | | | | S. SW. & E. | Do. |
| 17 | 3,0 | 5,8 | 7,0 | 6,9 | 6,8 | 4,2 | 3,0 | | | | S, SW. & SE. | M. cl. & L. & Th. |
| 18 | 3,2 | 6,7 | 8,0 | 5,5 | 3,5 | 3,8 | 3,5 | | | | W. NW. & SW. | Do. rn. |
| 19 | 2,2 | 2,9 | 7,1 | 3,3 | 2,9 | 3,2 | 3,5 | 0,208 | | | SW. & S. | M. cl. Do. |
| 20 | 1,7 | 4,4 | 5,0 | 3,4 | 4,0 | 4,1 | 3,6 | | | 2,354 | SW. SE & E. | Do. |
| | | | | | | 3,1 | | | | | | |
| 21 | 3,3 | 4,8 | 6,6 | 5,9 | 3,1 | | | | | | W. & SE. | Cl: d. Do. & h. r. |
| 22 | 2,0 | 1,9 | 2,7 | 3,0 | 1,9 | 1,6 | | 2,194 | | | NW. SE. & S. | Do. |
| 23 | 2,0 | 1,7 | 2,1 | 3,8 | 1,1 | 1,2 | | | | | N. NW. & W. | Do, |
| 24 | 1,7 | 1,3 | 1,3 | 1,1 | 0,5 | ---- | | | 0,382 | | NW. N. & SE. | Do, rn, |
| 25 | 0,7 | 1,3 | 1,8 | 0,6 | 0,7 | 0,0 | | | | | W. N. & NE. | |
| | | | | | | | | | | | | Do, |
| 26 | 1,9 | 0,9 | 2,0 | 1,2 | 1,2 | 0,9 | 0,7 | | | | W. NW. S. | Do. |
| 27 | 1,2 | 3,0 | 5,0 | 3,6 | 1,9 | 1,6 | 0,5 | | | 0,944 | W. NW. SE. | Do. |
| 28 | 2,6 | 5,9 | 5,0 | 3,0 | 2,7 | 2,0 | | | | | NW. & SE. | M. flg. cl. L. & T. r. |
| 29 | 2,1 | 3,9 | 6,0 | 7,3 | 3,0 | 2,4 | | 0,035 | | | W. NW. & SW. | M, cl. L. T. & h. r: |
| 30 | 2,7 | 2,6 | 3,9 | 3,6 | 0,6 | 0,7 | | 0,548 | 0,042 | | SW. W. & NW. | Cl. D. L. & T. & r, |
| 31 | 1,3 | 2,4 | 2,4 | 3,4 | 3,5 | 3,0 | | 0,409 | | | NW. N. SW. | M, cl. Lt. & Thr. |
| Mean | 3,7 | 5,4 | 6,7 | 6,2 | 4,5 | 3,7 | 3,8 | | | | | |

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The instruments with which the foregoing observations have been made, are placed upon a table about 4 feet above the ground in the western verandah of the Honourable Company's Observatary; which is situated in Longitude 5h. 21′ 9″ E: Latitude 13° 4′ 9″ N; at about two miles from the Sea and about 27 feet above the low water mark.

T. G. TAYLOR,

*H. C. Astronomer.*

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